

November 8, 2001



CITY OF  
TUCSON

COMPREHENSIVE  
PLANNING  
TASK FORCE

September 5, 2003

To: Subscriber to the City of Tucson Development Standards Book

Subject: Supplement No. 8 to the Development Standards Book

Dear Subscriber:

Enclosed is Supplement No. 8 to your copy of the City of Tucson Development Standards book. An explanation of the revisions included in this Supplement is also enclosed.

This update incorporates a revision to Development Standard 3-01.0 Street Development Standard.

Please recycle and replace pages in your Development Standards book as follows.

| <b>SECTION 3. TRANSPORTATION</b>                                   |   |   |
|--|---|---|
| <b>Item</b>  | <b>Remove Old Pages</b>                   | <b>Insert New Pages</b>                   |
| <i>Table of Contents</i>   | 1,2                                       | 1,2                                       |
| <i>Development Standard 3-01.0<br/>Street Development Standard</i> | 3-12; 19,20; 23,24;<br>Figure 1- Figure 6 | 3-12; 19,20; 23,24;<br>Figure 1- Figure 6 |
| <b>APPENDIX</b>  |   |   |
| <b>Item</b>  | <b>Remove Old Pages</b>                   | <b>Insert New Pages</b>                   |
| <i>Establishment and Revision History</i>                          | 13,14                                     | 13,14                                     |

Please insert and maintain this instruction sheet in the front of your copy of the Development Standards book.

Should you have any questions while replacing these pages, please call me at 791-4505.

September 5, 2003

Sincerely,

Jennifer Noriega  
Planning Technician

JN:/s/devstds/text/dssupltr8.doc

Enclosures: Supplement Summary  
Sup. No. 8 to Development Standards Book

**CITY OF TUCSON DEVELOPMENT STANDARDS BOOK –  
SUPPLEMENT NO. 8**

**SUPPLEMENT SUMMARY**

**Development Standard 3-01.0, Street Development Standard.** This Standard was revised per Mayor and Council direction to provide area residents with visitor parking along both sides of the right-of-way of local streets. The street cross-section also serves in calming traffic flow by reducing pavement width. A minimum sidewalk width of five (5) feet ensures pedestrian access, which allows two (2) or more people to walk simultaneously.

**Establishment and Revision History.** Revised to provide information on the revision of Development Standard 3-01.0.

In addition, this Supplement corrects some minor formatting errors.

## **SECTION 1. ADMINISTRATION**

- 1-01.0.0 Procedures for the Establishment of Development Standards
- 1-02.0.0 Presentation Format for Proposed Development Standards
- 1-03.0.0 Community Design Review Committee
- 1-04.0.0 Subdivision Assurance Procedures
- 1-05.0.0 Development Review Fee Schedule
- 1-06.0.0 Planned Area Development (PAD) Zone Rezoning Procedures
- 1-07.0.0 Rezoning Procedures
- 1-08.0.0 Plan Amendment Procedures
- 1-09.0.0 Subdivision Plat Approval

## **SECTION 2. DEVELOPMENT PLAN/SITE PLAN**

- 2-01.0.0 Reserved
- 2-02.0.0 Site Plan Content and Specifications
- 2-03.0.0 Platting Procedures
- 2-04.0.0 Site Plan Application and Submittal Requirements
- 2-05.0.0 Development Plan Standard
- 2-06.0.0 Landscaping and Screening Standards
- 2-07.0.0 Landscape Plan Content and Specifications
- 2-08.0.0 Pedestrian Access
- 2-09.0.0 Bicycle Parking Facility Design Requirements
- 2-10.0.0 Residential Cluster Project (RCP) Standard
- 2-11.0.0 Reserved
- 2-12.0.0 Hillside Development Zone (HDZ) Standard
- 2-13.0.0 Environmental Resource Zone (ERZ) Standard
- 2-14.0.0 Reserved
- 2-15.0.0 Native Plant Preservation Standard

### **SECTION 3. TRANSPORTATION**

- 3-01.0.0 Street Development Standard
- 3-02.0.0 Reserved
- 3-03.0.0 Pavement Cut Criteria
- 3-04.0.0 Reserved
- 3-05.0.0 Vehicular Use Area Design Criteria

### **SECTION 4. PUBLIC SAFETY**

- 4-01.0.0 Emergency Procedures for Historic Structures

### **SECTION 5. SANITARY SEWERS**

### **SECTION 6. SOLID WASTE DISPOSAL**

- 6-01.0.0 Solid Waste Disposal (Refuse)

### **SECTION 7. UTILITIES (PRIVATE WATER COMPANIES, ELECTRIC, GAS, TELEPHONE)**

- 7-01.0.0 Abandonment of Easements in Resubdivision

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**SECTION 8. WATER UTILITY**

**SECTION 9. SPECIAL DEVELOPMENT DISTRICTS**

- 9-01.0.0     Reserved
- 9-02.0.0     Historic Preservation Zone Development Standards
- 9-03.0.0     Historic Districts, Sites, and Structures
- 9-04.0.0     Hillside Development Site Improvement
- 9-05.0.0     Rio Nuevo and Downtown (RND) Zone
- 9-06.0.0     Landscape Plant Materials

**SECTION 10. HYDROLOGY**

- 10-01.0.0     Stormwater Detention/Retention Manual
- 10-02.0.0     City of Tucson Standards Manual for Drainage Design and  
Floodplain Management in Tucson, Arizona

**SECTION 11. GLOSSARY**

**SECTION 12. APPENDIX**

Establishment and Revision History

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STREET DEVELOPMENT STANDARD**

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**STREET DEVELOPMENT STANDARD**

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**3-01.0.0 STREET DEVELOPMENT STANDARD.**

**3-01.1.0 GENERAL.**

1.1 Purpose. The following Street Development Standard has been established to:

- Provide for streets of suitable location, width, and improvement to safely accommodate vehicular, pedestrian, disabled pedestrian, and bicycle traffic;
- Afford satisfactory access to police, fire fighting, ambulance, paramedic, utility, sanitation, and street maintenance equipment;
- Coordinate street improvements, both public and private, so as to compose a convenient system and avoid undue hardships to adjoining properties; and
- Provide design values and alternatives most suitable for various situations as dictated by safety and sound engineering judgment.

1.2 Scope. This Standard applies to all development located within the City of Tucson.

1.3 Functional Classifications. The improvement and development of streets is based on the functional classification system. The design characteristics of the street depend on the volume and type of traffic, length of street, and whether or not it is a through street.

The three (3) functional classifications identified by the City of Tucson are local streets, collector streets, and arterial streets.

1.4 Definitions. Definitions for words used in this Standard are found in the Development Standards Glossary or in Sec. 6.2.0 of the Tucson *Land Use Code (LUC)*.

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**3-01.2.0 STREET COMPOSITION.**

**2.1 Right-of-Way Requirements.**

- A. All rights-of-way, both public and private, will be designed to accommodate present and future street pavements, medians, curbs, walks, utility installations, drainage, landscaping, and other design considerations. All entire or partial right-of-way widths are in whole numbers, dimensioned in feet.

The following abbreviations are used in this Standard to refer to right-of-way elements.

|                    |                   |
|--------------------|-------------------|
| M - Median         | T - Travel Lanes  |
| TL - Turning Lanes | C - Curbs         |
| B - Bike Lanes     | P - Parking Lanes |
| W - Sidewalk Area  |                   |

- B. The minimum required right-of-way width consists of:

|                  |                                      |
|------------------|--------------------------------------|
| Local Street     | T & C & P & W                        |
| Collector Street | T & C & W & TL & B & M (if required) |
| Arterial Street  | T & C & W & TL & B & M               |

- C. Each arterial and collector street will be designed to *Major Streets and Routes (MS&R) Plan* guidelines to accommodate the projected traffic for the design year and any safety features, buffer zones, frontage roads, refuge lanes, bus lanes, or other design considerations.
- D. Additional right-of-way is required by the *MS&R Plan* at major intersections to allow for necessary turning movements and other street uses.
- E. Where considered appropriate by the Tucson Department of Transportation (TDOT), additional right-of-way may also be required for installing mass transit stops, facilities for the physically disabled, or stormwater flows and drainage structures.

**2.2 Traffic Volumes.**

- A. Residential Average Daily Traffic (ADT) can be estimated according to the following table.

| Type of Dwelling Unit   | ADT per Unit |
|-------------------------|--------------|
| Single Family Dwellings | 10.0         |
| Apartment/Condominiums  | 7.0          |
| Townhomes               | 6.0          |
| Mobile Homes            | 5.0          |



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**2.2    Traffic Volumes. (Cont'd)**

- B.    Nonresidential ADT can be estimated using the *Trip Generation Manual of the Institute of Transportation Engineers*.
- C.    The ADT calculated for the project must be added to the ADT of the through traffic on any street adjacent to the project, to determine whether the requirements of this Standard apply to the street.

**2.3    Width Requirements. (See **Figures 1-5.**)**

A.    Pavement and Travel Lane Widths.

- 1.    Paved roadway and travel lane widths are determined by the use of the following tables.

| <b>TABLE 1 - MIDBLOCK PAVEMENT WIDTHS</b> |   |                        |
|---|---|------------------------|
| <b><i>Number of<br/>Parking Lanes</i></b> | <b><i>Minimum Width of 2-Way Roadway<br/>Exclusive of Curbs</i></b> |                        |
|   | <b>ADT 0-1,000</b>  | <b>ADT 1,001-2,500</b> |
| 0   | 24 feet   | 24 feet                |
| 2   | 32 feet*  | 40 feet                |

\*May be used only with two (2) foot wide wedge curbs.

| <b>TABLE 2 - TRAVEL LANE WIDTHS</b> |                                  |                               |
|-------------------------------------|----------------------------------|-------------------------------|
| <b><i>ADT</i></b>                   | <b><i>Lane Width</i></b>         | <b><i>Number of Lanes</i></b> |
| 0 to 1,000                          | 10 feet                          | 2                             |
| 1,001 to 2,500                      | 12 feet                          | 2                             |
| Over 2,500                          | Designed on a case-by-case basis |                               |

- 2.    The width of a travel lane is determined by the speed of traffic, modal split, truck traffic, ADT, and other considerations. Where the volume of truck traffic exceeds five (5) percent of the ADT, the minimum travel lane width will be twelve (12) feet. Where speed of traffic and modal splits effect the width of travel lanes, lane widths will be approved by TDOT.
- B.    When a travelway exhibits characteristics of both a parking area access lane (PAAL) and a local street, TDOT will classify the travelway according to the most dominant use.

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**2.4    Parking Lanes.**

- A.    A parking lane is seven (7) feet in width and parallel with the curb, if used with a vertical curb and measured from the face of the vertical curb, and eight (8) feet in width and parallel with the curb, if used with a wedge curb and measured from the back of the wedge curb.
- B.    When wedge curbs are permitted, they may be included as a part of the parking lane.
- C.    Parking is prohibited on arterial and collector streets, unless specifically authorized by the Mayor and Council.
- D.    Local streets must be designed with parking on both sides of the street, unless parking is provided in common areas distributed throughout the subdivision, at a ratio of one parking space per dwelling within the subdivision.

**2.5    Additional Vehicular Lanes.**

- A.    Deceleration and/or acceleration lanes may be required adjacent to driveways on streets having a posted speed of thirty-five (35) miles per hour or greater or where the ADT of the driveway exceeds one thousand (1,000).
- B.    Left turn lanes, with appropriate transitions, may be required on streets that exist at less than the full future width or where significant turning movements will occur. The minimum turn lane width is twelve (12) feet.
- C.    TDOT will determine when deceleration, acceleration, and/or left turn lanes are required, based on a traffic analysis supplied by the developer. The analysis must comply with procedures detailed in the *Highway Capacity Manual*, latest edition, or with procedures supplied by TDOT.
- D.    Pavement transitions are to be designed based upon the following formulas. Design speed is the posted speed plus ten (10) mph. (*Manual on Uniform Traffic Control Devices* [MUTCD], 1978 or subsequent edition.)

- 1.    For a design speed (d) less than or equal to forty (40) mph, the length (L) of the transition in feet is:

$$L = \frac{([d]^2 \times \text{offset \{ft.\}})}{60}$$

- 2.    For a design speed (d) greater than forty (40) mph, the length (L) of the transition in feet is:

$$L = ([d] \times \text{offset \{ft.\}})$$

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2.5 Additional Vehicular Lanes. (Cont'd)

Examples:

| Posted Speed | Offset | Transition Length |
|--------------|--------|-------------------|
| 40           | 12'    | 600'              |
| 50           | 12'    | 720'              |
| 40           | 6'     | 300'              |
| 50           | 6'     | 360'              |
| 25           | 12'    | 245'              |
| 30           | 12'    | 320'              |

- E. Median islands will be designed with a length consistent with the design speed of the street and have a nominal width of twenty (20) feet but at no point be less than six (6) feet in width. Median islands will provide accessible routes through or across medians and a place of refuge for pedestrians and disabled pedestrians at all pedestrian crosswalks.

2.6 Bikeways, Lanes, and Paths.

- A. Bikeways and bike paths separate from the paved roadway require a minimum of five (5) feet for one-way travel and a minimum of ten (10) feet for two-way travel.
- B. Each bike lane within the paved roadway requires a minimum of five (5) feet of additional pavement.
- C. Bikeways, bike lanes, and bike paths will be designed in accordance with the Arizona Department of Transportation publication, *Arizona Bicycle Facilities Planning and Design Guidelines* and Mayor and Council policy.

2.7 Sidewalk Areas.

- A. All streets require a sidewalk area on each side of the street. A sidewalk area generally consists of a space between the curb and sidewalk, area for a sidewalk, and a ground slope area. Improvements include, but are not limited to, wheelchair ramps, sidewalks, driveways, utilities, street furniture, landscaping, and drainage structures.

Reduction in the width of the sidewalk area is not allowed, except when authorized by the City Engineer or designee under any of the following conditions.

1. If an alternative street cross-section has been previously approved;
2. In order to accommodate existing grade differentials;
3. In order to match existing sidewalks;
4. In order to accommodate drainage facilities.

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**2.7    Sidewalk Areas.** (Cont'd)

- B.     The space between the curb and the sidewalk is reserved for placing fire hydrants, traffic signs, mailboxes, water meters, drainage structures, and other similar uses. The minimum width for this space is two (2) feet.

The space between the curb and sidewalk may be excluded. (See **Figures 1 and 2.**) In such a situation, sufficient right-of-way on the property side of the sidewalk must be dedicated to accommodate the items normally found in the space.

- C.     When landscaping is installed in sidewalk areas which are not required to have sidewalks, a four (4) foot wide walk area must be kept free from trees and large bushes. If curbs exist, the walk area will be graded to provide a ground slope of two (2) percent to the top of the curb.
- D.     In sidewalk areas where sidewalks are installed, owners of abutting property may place pea gravel, decomposed granite, or brick in sand in the space between the curb and sidewalk and in the ground slope areas without a permit from the City of Tucson.
- E.     Landscaping work in street right-of-way that involves irrigation systems, raised planters, trees, large shrubs, or curbing will require the abutting property owner to submit a plan to, and receive written approval and a permit (pursuant to Chapter 25, Tucson Code) from, TDOT. The landscaping will be reviewed for sight visibility safety, pedestrian safety, upheaval potential, and compatibility with existing utilities and drainage facilities.
- F.     Any improvements (landscaping, irrigation, etc.) installed in the sidewalk area by the owner of an abutting property will be installed at the owner's expense. If the improvements need to be removed or relocated because of construction of City of Tucson projects, removal and relocation will be at the owner's expense.
- G.     Maintenance of the sidewalk area is the responsibility of the owner of the abutting property.

**2.8    Pedestrian Access.** Barrier-free access routes shall be designed so they are traversable at all times and free of floodwater during a ten (10) year frequency flood event.

- A.     All streets require the installation of a barrier-free pedestrian circulation path, unless specifically exempted by this Standard. The pedestrian circulation path consists of sidewalks, wheelchair ramps, and landings.

Where the local street system is designed so that access to schools via the local streets is indirect, a pedestrian easement is required which provides a direct route to nearby schools.

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2.8 Pedestrian Access. (Cont'd)

- B. Pedestrian circulation paths located in a street will conform to the criteria in this Standard.
- C. Pedestrian circulation paths located within a development must meet the criteria listed in Development Standard 2-08.0 and in Sec. 3-01.4.4 of this Standard.

**3-01.3.0 STREET IMPROVEMENTS.**

3.1 Paving.

- A. All pavement sections will be designed in accordance with ambient soil conditions and projected use, using a method acceptable to the City Engineer.
  - 1. The minimum structural section for permanent pavement on local streets is:
    - a. Two (2) inches of asphaltic concrete, supported by four (4) inches of aggregate base course, supported by subgrade compacted to ninety (90) percent relative density in accordance with the Pima County and City of Tucson *Standard Specifications for Public Improvements*; or
    - b. Three and one-half (3½) inches of asphaltic concrete supported by subgrade compacted to ninety (90) percent relative density in accordance with *Standard Specifications for Public Improvements*.
  - 2. The minimum structural section for an interim paving improvement is two (2) inches of asphaltic concrete on compacted subgrade. (Interim paving may be constructed on public streets when designated by the City Engineer. Such interim paving must be at least twenty-four [24] feet in width. Curbing may be required.)
  - 3. The minimum structural section for a private residential street is dust control paving.
  - 4. The minimum structural section for a private street in an industrial development will be three (3) inches of asphaltic concrete supported by six (6) inches of aggregate base course.
  - 5. The minimum structural section for temporary paving is two (2) inches of asphaltic concrete pavement on compacted earth.
- B. All asphaltic concrete will conform to *Standard Specifications for Public Improvements* or an approved equivalent, unless directed otherwise by the City Engineer.

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3.2 Curbing.

- A. Curbing is required on all streets in order to adequately control drainage within the street, prevent moisture from entering the subgrade, control access to abutting property, separate the roadway from the pedestrian area, and provide adequate lateral support for the pavement structure.
- B. Curbing will conform to the following criteria.
  - 1. Curbing will be vertical or wedge curbs as detailed in *Standard Details for Public Improvements*.
  - 2. Vertical curbing is required on all streets:
    - a. With a projected ADT of one thousand (1,000) or more, and
    - b. When the sidewalk adjoins the back of curb.
  - 3. Wedge curbing may be used on streets with a projected ADT of one thousand (1,000) or less.
- C. At the intersections of streets with other streets or of streets with PAALs/driveways, the curb lines will be connected with a curve having the minimum radius shown in **Figure 6**, measured at the face of the curb.
- D. At intersections of alleys with streets having vertical curbing, curb returns with a minimum radii of twelve (12) feet are required. If the alleys are not paved, the ends of the curb returns will be connected with a concrete header along the extension of the street right-of-way. Curb cuts may be used in place of curb returns only with the approval of the City Engineer. (See **Figure 7**.)

When wedge curbs are used, curb returns need not be provided at alleys unless required for drainage control.
- E. All curb cuts, curb returns, and curb depressions will be located in accordance with the City of Tucson Code, Chapter 25.
- F. Wheelchair ramps meeting the criteria of this Standard will be provided at all curb returns.
- G. When curb returns are installed at arterial intersections, conduit and pull boxes will also be installed per the currently adopted street lighting plan to allow for future lighting projects. The conduit and pull boxes will be to *Standard Details for Public Improvements*. TDOT will provide guidelines as to plan details.

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**3.3 Pedestrian Circulation Paths.**

- A. Sidewalks are required as part of new development of all properties. All new subdivisions and applications for building permits shall provide five (5) foot wide sidewalks along the entire length of street frontage, whether public or private, of the property in question. The sidewalk requirements also apply to expansions in floor area, site area, or vehicular use area of twenty-five (25) percent or more. Sidewalks are not required in the following circumstances.
1. At locations where pedestrian traffic is extremely unlikely, subject to approval of the Community Design Review Committee (CDRC);
  2. At locations where pedestrian traffic is heavily predominant along only one (1) side of a street, a sidewalk is required only on that side of the street, subject to approval of the CDRC;
  3. For development of parcels located in areas included in improvement districts which are under design and which include sidewalks;
  4. On any residential street with an ADT of less than one hundred forty (140), provided the street has vertical curbs and concrete driveways providing pedestrian and disabled pedestrian access to the dwelling on each lot;
  5. On any residential street with an ADT of less than four hundred (400), provided that a sidewalk is constructed in an alternative location approved by the CDRC;
  6. For subdivisions proposing individual single-family residential lots, with each lot containing sixteen thousand (16,000) square feet of area or more;
  7. On streets in established areas without existing curbs;
  8. For lots containing drainageways in which the flow from the one hundred (100) year storm is one hundred (100) cfs or greater, provided an alternate route for pedestrians is constructed in a location approved by the CDRC. This exception is limited to the width of the drainageway, which is measured from top-of-bank to top-of-bank;
  9. For streets in established areas where adequate right-of-way does not exist and existing improvements adjacent to the right-of-way preclude granting a public pedestrian easement for construction of pedestrian facilities on site;
  10. For a single-family lot where adjacent lots are developed without sidewalks, provided the lot is not part of a subdivision that is under development or has assurances posted for such improvements.

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3.3 Pedestrian Circulation Paths. (Cont'd)

B. Sidewalk Location. Sidewalks must meet the following locational requirements.

1. Sidewalks will be located a minimum of two (2) feet from the back of the existing or projected wedge curb location (the standard location) and extend to the curb at all street intersections.

These sidewalks may meander, if:

- a. The sidewalk is in the standard location at the extension of the property lines or matches the alignment of the abutting sidewalks; and
  - b. On a public street, the sidewalk is located within the right-of-way or within an acceptable pedestrian easement; and
  - c. The maximum lateral offset does not exceed seven and one-half (7½) feet; and
  - d. Lateral transitions in the sidewalk are no sharper than three (3) longitudinal to one (1) lateral; and
  - e. Irrigation is not placed between the sidewalk and the curb; and
  - f. The sidewalk is a minimum of five (5) feet in width where it adjoins vertical curbing.
2. Sidewalks will extend the full width of the street frontage of the development to provide continuity of the pedestrian and disabled pedestrian circulation path.
  3. Bus benches and shelters will be located adjacent to the edge of the sidewalk and will not encroach into the five (5) foot wide circulation path.
  4. There will be a minimum of one (1) foot separation between the five (5) foot wide pedestrian circulation path portion of any sidewalk and any adjacent structure. This one (1) foot wide area may also consist of concrete.
  5. Sidewalks must be physically separated from any vehicular travel lane by means of curbing, grade separation, barriers, railings, or other means, except at crosswalks.

C. Ramp Requirement. Curb ramps must be provided at all points where the sidewalk intersects a curb, in accordance with Arizona Revised Statute 9-499.02. Ramps must align with each other where they cross the street.



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**3-01.4.0 CONSTRUCTION STANDARDS.**

4.1 Sidewalk Specifications.

A. *Width.*

1. Sidewalks located along a street will meet the following requirements.

- a. All projects which require a new sidewalk will provide a sidewalk with a minimum width of five (5) feet, installed to avoid any obstruction which decreases the minimum width to less than five (5) feet.

Additional sidewalk width is required for schools and within pedestrian oriented areas, such as the University area and the Downtown Redevelopment Area.

- b. All projects which have an adjacent existing sidewalk less than four (4) feet in width will provide a sidewalk with a minimum width of five (5) feet by:

- 1) Increasing the width of any narrower existing sidewalk to five (5) feet; and
- 2) Removing all obstructions (such as poles, signs, benches, bus stops, etc.) from the sidewalk to provide a minimum width of five (5) feet; or
- 3) Constructing additional sidewalk where obstructions cannot be moved, so that a minimum five (5) feet of sidewalk extends past the obstruction.

- c. Where sidewalks are less than five (5) feet in width, passing spaces at least five (5) feet by five (5) feet will be located at reasonable intervals not to exceed two hundred (200) feet. A T-intersection of two (2) sidewalks or a level driveway apron is an acceptable passing space. A public pedestrian easement may be required for installation of the passing spaces.

- B. *Vertical Clearance.* All sidewalks will have an unobstructed vertical clearance of eighty-four (84) inches.

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4.1 Sidewalk Specifications. (Cont'd)

C. *Composition.*

1. Sidewalks located within a street right-of-way, both parallel to the street and leading into a development project, will be constructed in conformance with the composition requirements of the *Standard Details for Public Improvements*. The *Standard Details for Public Improvements* may have to be modified to comply with the slope requirements of this Standard. Textured concrete will have a relief less than or equal to one-eighth (1/8) inch.

D. *Slope.*

1. *Accessible Route Cross Slope.* The cross slope of the sidewalk will not exceed two (2) percent. If existing public sidewalks which intersect driveway aprons have a cross slope which exceeds two (2) percent (where the apron slope is measured to the back of the sidewalk), one (1) of the following will occur. A public pedestrian easement may be required for installation of pedestrian facilities.
  - a. The driveway apron will be reconstructed so the sidewalk portion of the apron does not exceed two (2) percent cross slope; or
  - b. An additional four (4) feet of sidewalk, with transitions, will be installed behind the existing apron; or
  - c. Additional paving will be installed to provide a level accessible route, with transitions, in the parking area behind the sidewalk; or
  - d. Where excess right-of-way exists, the sidewalk is meandered behind the driveway apron to provide an accessible route.
2. *Accessible Route Running Slope.* The running slope of the sidewalk will not exceed one (1) vertical to twenty (20) horizontal, unless the longitudinal grade of the street exceeds this maximum. Any portion of a sidewalk which exceeds this slope will conform to the requirements of this Standard concerning ramp construction, unless TDOT determines that extenuating circumstances preclude conformance.

4.2 Ramp Specifications.

- A. *Width.* All ramps will have a minimum width of four (4) feet, excluding edge protection or flared sides.
- B. *Rise.* The maximum rise for any ramp will be thirty (30) inches.

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4.2 Ramp Specifications. (Cont'd)

C. *Slope.*

1. *Accessible Route Cross Slope.* The cross slope of ramps will not exceed one (1) vertical to fifty (50) horizontal.
2. *Accessible Route Running Slope.* The running slope of ramps will not exceed one (1) vertical to twelve (12) horizontal. This includes the slope of the underlying and adjacent topography.

Exceptions:

- a. Changes in elevation no greater than one-fourth ( $\frac{1}{4}$ ) inch may be vertical and without treatment.
- b. Changes in elevation between one-fourth ( $\frac{1}{4}$ ) inch and one-half ( $\frac{1}{2}$ ) inch will be beveled with a slope no greater than one (1) vertical to two (2) horizontal.

D. *Ramp Landings.* All ramps will have an unobstructed level landing both at the top and the bottom of the ramp, meeting the following requirements.

1. *Width.* The landing will be at least as wide as the ramp leading into it.
2. *Length.* The landing will be at least five (5) feet long.
3. *Landing Slope.* A landing will be level in any direction. A street surface may be used for the landing at the bottom of the ramp if it meets all composition and slope requirements for an accessible route.

E. *Sidewalk/Ramp Intersections.* A sidewalk will intersect a ramp only at the top or bottom landing.

F. *Ramp Safety.*

1. *Obstruction by Parked Vehicles.* Curb ramps will be located so that vehicles cannot park blocking the ramp access.
2. *Handrails.* Handrails will be required for any ramp other than a curb ramp with a rise greater than six (6) inches or longer than seventy-two (72) inches. The following criteria apply.
  - a. Handrails will be located on both sides of the ramp.
  - b. On any ramp which changes direction, the inside handrail will be continuous.

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4.2 Ramp Specifications. (Cont'd)

- c. The height of the top of the handrails will be between thirty (30) inches and thirty-four (34) inches from the ramp surface.
  - d. If the handrails are constructed of metal, the top railing will be covered with a non-heat-conducting material.
- 3. *Vertical Drop-Offs.* If any ramp other than a curb ramp has a vertical drop-off on the side, there will be a curb, wall, railing, or surface projecting above the ramp surface to prevent pedestrians and wheelchairs from slipping off the ramp. Minimum height of any protective device will be two (2) inches.
- 4. *Surface.* Ramps and landings will be rough finished for traction. Stamped textured concrete is not acceptable.
- 5. *Drainage.* All ramps and landings will be designed so that water does not collect on the surface of the ramp or landing.

4.3 Driveways.

- A. Driveway aprons will be of portland cement concrete (PCC) constructed to City of Tucson Standards, with a standard length of eight (8) feet from the front of the curb to the back of the apron.
- B. Curb returns may be used in place of standard curb cuts only when one (1) or more of the following conditions occur.
  - 1. The ADT of the driveway exceeds one hundred (100);
  - 2. The points of access to a property should be limited for traffic control and other reasons;
  - 3. Local conditions occur which involve speed, the amount of truck traffic, or the type of development and which, in the opinion of TDOT, require curb returns.

- 4.4 Street Drainage. A portion of rainfall which falls on subdivision lots eventually concentrates in either streets or drainageways. The primary function of streets is to carry the traffic. In most cases, however, drainage and traffic flow can complement each other to accomplish the most efficient use of streets. As the storm runoff amount increases adjacent to curbs, it will begin to interfere with traffic movement, at which time the flow or portions thereof must be removed from the streets into drainageways.

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4.4 Street Drainage. (Cont'd)

- A. *Drainage Criteria for Local, Collector, and Arterial Streets.* The design criteria given in Sec. 12.2 of Development Standard 10-02.0 "Standard Manual for Drainage Design and Floodplain Management in Tucson, Arizona" shall apply to all newly constructed and substantially improved local, collector, and arterial streets. The following drainage design criteria shall apply.
1. Runoff from a ten (10) year storm must be contained within the curbs of the street. On arterial streets or multiple lane roadways, at least one (1) travel lane in each direction shall be free from flooding during a ten (10) year flood. Otherwise, storm drains, drainage channels, or other acceptable infrastructure shall be provided to comply with all-weather access requirements.
  2. Storm drain systems shall be designed such that the ten (10) year storm is contained in the combined street gutter and storm drain system. Whenever developments occur in areas not adequately served by existing storm drains and/or drainage channels and street drainage design criteria require installation of storm drains, the design of this drainage facility shall be as approved by the City Engineer's Office.
- B. *Maximum Allowable Street Flow.* All streets shall be designed and constructed so that the maximum rate of storm runoff flowing in the direction of vehicular travel *should not* exceed 50 cfs. In no case *shall* the maximum rate of storm runoff flowing in the direction of vehicular travel exceed one hundred (100) cfs without proper justification and prior approval by the City Engineer's Office.
- C. *Drainage Conveyance Structures.* Curb cuts, sidewalk scuppers, curb inlets, grate inlets, or other drainage conveyance structures shall be constructed, as appropriate, to convey the street flow to the storm drain or other drainageways.
- D. *Flow at At-Grade Dip Crossings.* Streets required for permanent all-weather access shall be designed and constructed so that the maximum rate of storm runoff flowing across the street at a wash crossing shall not exceed one (1) foot in depth during a one hundred (100) year flood.
- E. *All-Weather Access.* All-weather access is a safe vehicular travel route which both conventional and emergency vehicles require for the purpose of unimpeded access. Streets required for permanent all-weather access shall be designed and constructed based on the following performance criteria.
1. At least one (1) paved, permanent, all-weather access shall be provided to each lot over terrain which can be traversed by conventional motor vehicles in times of flooding. This Standard applies to public or private streets and to a designated route connecting a street and the development or building in question.

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4.4 Street Drainage. (Cont'd)

2. Stormwater runoff flowing either across or in the direction of an all-weather access route shall not exceed one (1) foot in depth during the one hundred (100) year flood.
  3. The depth of flow in a roadway shall not exceed one (1) foot in depth, except at drainage crossings, during the regulatory (100-year) flood peak discharge.
- F. *Sidewalks.* At any point where the ten (10) year flood discharge starts to cross a sidewalk, the sidewalk shall be designed and constructed to convey the ten (10) year flood flow under the sidewalk. The equation or design criteria  $dv^2 < 18$  may be utilized to regulate flow depths and/or flow rates exceeding the ten (10) year flood discharge magnitudes.

4.5 Vehicular Travel Lane Grade Criteria.

- A. Barring unusual circumstances of grade or drainage conditions, the following criteria apply to streets (both public and private) and alleys. Any exceptions must be obtained in writing from the City Engineer.

| Maximum Longitudinal Grades         |     |
|-------------------------------------|-----|
| Travelways under 600 feet in length | 15% |
| Travelways over 600 feet in length  | 12% |
| Cul-de-sac turning areas            | 8%  |

| Minimum Longitudinal Grades |       |
|-----------------------------|-------|
| Crowned streets             | 0.50% |
| Inverted streets            | 0.50% |

- B. Vertical curves are required on local, collector, and arterial streets where the algebraic difference in grade exceeds one (1) percent, and the minimum desirable vertical curve length is one hundred (100) feet. Vertical curves will be designed to meet minimum stopping sight distance.
- C. Crowned Streets (see **Figure 8**). When the street is used as a ramp landing, the maximum slope of the landing area is two (2) percent.
1. The minimum crown is two (2) percent for streets with a longitudinal grade of 0.50% or greater.
  2. The minimum crown is three (3) percent for streets where a longitudinal grade less than 0.50% is approved.
  3. The maximum crown is four (4) percent.

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4.5 Vehicular Travel Lane Grade Criteria. (Cont'd)

- D. Inverted Streets (see **Figure 8**). When the street is used as a ramp landing, the maximum slope of the landing area is two (2) percent.
  - 1. The minimum cross slope for an inverted street is two (2) percent for streets with a longitudinal grade of 0.50% or greater.
  - 2. The minimum cross slope for an inverted street is three (3) percent for a street where a longitudinal grade of less than 0.50% is approved.
  - 3. Inverted crown slopes in excess of three (3) percent may be used only with the City Engineer's approval.
- E. Street improvements are required on streets abutting properties subject to rezoning or subdivision platting. The extent of the improvements will be based on the street classification, the amount of traffic projected, soil conditions, and drainage.
- F. All street improvement plans must comply with *Standard Details for Public Improvements* which outlines drafting standards for the preparation of plans.
- G. All standard details, specifications, and procedures mentioned in this Standard may be obtained at the Office of the City Engineer or the City Clerk.

4.6 Utilities.

- A. Utilities will be located in compliance with utility location drawings. (See **Figures 9-14.**)
- B. Strip easements may be used along streets for the installation of utilities. (See **Figure 15.**) With the exception of minor service extensions to individual parcels, all longitudinal utility installations between service points at individual parcels will be located within street rights-of-way. Access between the street and the private property will not be denied unless unsafe conditions exist.
- C. All sanitary sewer facilities will be constructed in accordance with current Pima County Department of Wastewater Management standards.

- 4.7 Assurances. When assurances for street, sewer, electric and water utilities, and drainage and flood control improvements are required in conjunction with a subdivision, they will be posted prior to final plat approval by the City Engineer or designee. Assurances are to be posted in accordance with Development Standard 1-04.0.

**3-01.5.0 SIGHT VISIBILITY.**

- 5.1 Sight Visibility Triangles. Clear lines of sight will be maintained along all streets and driveways to assure the safety of motorists and pedestrians.

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5.1 Sight Visibility Triangles. (Cont'd)

A. *Lines of Sight.*

1. Lines of sight will not be obscured between thirty (30) inches and six (6) feet through a triangular area adjacent to a driveway, a PAAL, an alley, or a street, where such access ways intersect with another street in a T-configuration. The sight visibility triangle, or sight triangle, consists of three (3) sides that are formed by two (2) intersecting access ways and a line connecting the two (2).

The first side, or through street side, is drawn parallel to the centerline of the street that is intersected. The second side, or stem side, is drawn parallel to the centerline of the stem street. The line which connects the first two (2) sides, or sight line, is drawn diagonally to the through street. (See **Figure 16.**)

Where streets meet in a four (4) way intersection, each street is considered a stem, with the other street considered the through street, for purposes of determining the sight triangle. (See **Figure 17.**)

2. The datum for the purpose of measuring the limits of the lines of sight (i.e., thirty [30] inches and six [6] feet) is an imaginary plane formed by the intersection of the gutter line (or its approximation) of the through street with the at-grade centerline (or its approximation) of the stem street.

B. *Sight Visibility Triangle Criteria.*

1. A sight triangle will be maintained on each side of a stem that intersects a two (2) way through street so that clear sight is provided to vehicles approaching from both the near side (to the driver's left) and the far side (to the driver's right) of the stem. Near side means approaching traffic is on the same side of the street as the stem. Far side means approaching traffic is on the opposite side of the street from the stem.

The length required for the through street side of the sight triangle is measured on the side of the stem from which traffic approaches. On one-way streets or streets with median islands (i.e., no opening), only one (1) sight triangle is required on the side of approaching traffic; however, a twenty (20) foot (stem) by thirty (30) foot (curb) pedestrian visibility triangle will be maintained on the opposite side of approaching traffic. (See **Figure 16.**)

2. If a street is included on the *MS&R Plan*, both the existing and future sight visibility triangles (based on the *MS&R Plan* typical cross sections) should be shown. Future sight visibility triangles are to be based upon the *MS&R Plan* typical cross section for said street. The most restrictive sight visibility triangles will be used unless specifically exempted.



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5.1 Sight Visibility Triangles. (Cont'd)

3. The through street side of a sight triangle on a horizontal curve is measured along a chord, as opposed to along the arc. (See **Figure 18.**)
4. The sight triangle location and dimensions may be adjusted to compensate for unusual circumstances, such as irregular topography or grade changes, cul-de-sacs, curvilinear or deflected streets, or in other situations acknowledged by the CDRC.

5.2 Sight Distances.

- A. The length of the stem side of the sight triangle is twenty (20) feet, measured from a point specified below.
- B. The length and location of the through street side of the sight triangle for near side/far side is determined according to the following criteria.
  1. On any PAAL or on a street with an ADT of one hundred forty (140) or less, no sight triangle is required. The minimum building setback required in Sec. 3.2.6.5 of the *LUC* prevails.
  2. Where the ADT is greater than one hundred forty (140) but less than one thousand one (1,001), the through street side is considered a local street in the "Line of Sight Matrix" (Sec. 3-01.5.3) and is measured at the edge of the nearest adjacent travel lane.
  3. Where the ADT is between one thousand one (1,001) and twelve thousand (12,000) and the street is not designated as an arterial on the *MS&R Plan*, the through street side is considered a collector street in the "Line of Sight Matrix" and is measured at both the existing and projected (future) face of curb. The future face of curb is based on the typical *MS&R Plan* right-of-way cross section for that street.
  4. Where the ADT is twelve thousand (12,000) or more or the street is designated as an arterial on the *MS&R Plan*, the through street side is considered an arterial street in the "Line of Sight Matrix" and is measured at both the existing and projected (future) face of curb.

The future face of curb is based on the typical *MS&R Plan* right-of-way cross section for that street.

5. On any street designated by the *MS&R Plan* as requiring intersection widening, the midblock *MS&R Plan* cross section may be used, at the discretion of the City Engineer, for determining the future sight visibility triangles of parcels lying within or adjoining the intersection widened portion of the street right-of-way.

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5.3 Line of Sight Matrix.

| STEM STREET SIDE | THROUGH STREET SIDE |              |                  |                 |
|------------------|---------------------|--------------|------------------|-----------------|
|                  |                     | <i>Local</i> | <i>Collector</i> | <i>Arterial</i> |
| DRIVE/PAAL       | Near Side           | 185*         | 265              | 345             |
|                  | Far Side            | 110          | 110              | 125             |
| LOCAL            | Near Side           | 180          | 260              | 340             |
|                  | Far Side            | 110          | 110              | 125             |
| COLLECTOR        | Near Side           | 175          | 255              | 335             |
|                  | Far Side            | 110          | 110              | 125             |
| ARTERIAL         | Near Side           | 165          | 245              | 325             |
|                  | Far Side            | 110          | 110              | 125             |

\*Length in Feet

- 5.4 Structural Projections or Overhangs. Structural projections or overhangs over six (6) feet above finish grade are permitted within the required setback areas, provided that the overhang does not extend into the public right-of-way or the future right-of-way per the *MS&R Plan*, and the following conditions are met.

- A. On any PAAL, see Development Standard 3-05.2.2.B.
- B. On any street, see Sec. 3.2.6.5 and Sec. 3.2.6.6 of the *LUC*.

**3-01.6.0 STREET DESIGN CRITERIA.**

6.1 Street Layout.

- A. Partial local street rights-of-way are not acceptable for subdivision design. Modifications may be granted in accordance with Sec. 3-01.7.0. Where partial streets exist adjacent to the tract being developed (see **Figure 19**):
  - 1. Additional property necessary to provide the full width right-of-way must be dedicated; and
  - 2. Improvements must be made to the street as required by TDOT.
- B. Proposed developments will provide for the continuation of existing arterial and collector street right-of-way.
- C. The local street system will be arranged to discourage through vehicular traffic through the proposed development.
- D. When residential lots front on arterials or collectors, proposed developments will provide sufficient right-of-way for local service or access streets. Other treatments to protect residential properties by separation of through and local traffic will be considered.

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6.1 Street Layout. (Cont'd)

- E. Where residential driveways front directly on a major street, adequate area will be provided on site to accommodate a vehicular turnaround area or a circular driveway.
- F. The proposed development will provide streets that conform to all adopted neighborhood or area plans.
- G. All stub streets will be designed as collector streets for a minimum ADT of one thousand (1,000) vehicles and will provide temporary turnaround areas at the stub end.
- H. When the City of Tucson determines that vehicular access to or from a development or subdivision at a particular location should be prohibited in the public interest and for health, welfare, or safety, a one (1) foot wide no vehicular access easement will be dedicated to the City of Tucson. Physical barriers may be required.

6.2 Geometric Design.

- A. Street design will be in accordance with the following criteria, subject to the approval of the City Engineer and concurrence by the CDRC. Grades, curve criteria, sight distances, and other geometric design standards not specifically included in this Standard will conform to *A Policy on Geometric Design of Highways and Streets*, published by the American Association of State Highway and Transportation Officials (A.A.S.H.T.O.).

Arterial street design will conform to the current edition of the A.A.S.H.T.O. manual, *A Policy on Design of Urban Highways and Arterial Streets*.

Minimum posted speed for public local streets will be twenty-five (25) miles per hour. Private local streets may be designed for twenty (20) miles per hour.

- B. Permanent dead-end streets will be designed with an adequate turnaround at the dead end, except for dead-end streets less than one hundred fifty (150) feet in length, if municipal services, such as fire, refuse, and postal service, can be provided without the use of the street.

Dead-end streets may exceed six hundred (600) feet in length, as measured from the centerline of the connecting street to the far end of the turnaround area, under the following conditions.

- 1. The ADT is less than four hundred (400), and
- 2. The total length of the dead-end street is not to exceed twelve hundred (1,200) feet in length, and

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6.2 Geometric Design. (Cont'd)

3. The street is approved by both the Fire Department and TDOT, and
  4. The portion of the dead-end street nearest the connecting street has a minimum of thirty-six (36) feet of pavement (measured between backs of wedge curbs or between faces of vertical curbs) for a distance equal to the total length of the dead-end street less six hundred (600) feet.
- C. Turnarounds may be designed as cul-de-sacs or "T" or "Y" shaped configurations in accordance with Sec. 3-01.6.2.C.1 and Sec. 3-01.6.2.C.2.
1. The cul-de-sac is preferred by the City of Tucson at all times for local street turnarounds because of its overall efficiency. (See **Figures 20 and 21.**)
    - a. In residential areas, the right-of-way turnaround radius will be a minimum of fifty (50) feet, with a radius of fifty (50) feet for return curves.
    - b. In industrial and commercial areas, the right-of-way turnaround radius will be a minimum of sixty (60) feet, with a radius of sixty (60) feet for return curves.
    - c. In residential areas, the turnaround will be paved with a minimum radius of forty-two (42) feet, measured to the face of the vertical curb or to the back of the wedge curb, whichever is provided.
    - d. In industrial and commercial areas, the turnaround will be paved with a minimum radius of fifty-two (52) feet, measured to the face of the vertical curb or to the back of the wedge curb, whichever is provided.
    - e. Parking will be allowed along the curb of a cul-de-sac utilizing a pavement turnaround radius of fifty (50) feet or greater.
    - f. See **Figure 22** for the standard right-of-way and curb "knuckle" design for a street right-of-way of fifty (50) feet.
  2. "T" and "Y" shaped turnarounds may be used for dead-end streets which have a projected ADT of one hundred forty (140) or less. (See **Figure 23.**) Parking will not be allowed in the turnaround area. Vertical curbing is required in the turnaround area.
  3. Street improvements may be required on dead-end streets abutting properties subject to rezoning or subdivision platting. The extent of improvements will be based on the street classification, the amount of traffic projected, the soil conditions, and the drainage.

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- 6.3 Street Alignments. Jogs of less than one hundred fifty (150) feet in local alignments are not acceptable. Arterial and collector streets will not have jogs in alignment. (See **Figure 24.**)
- 6.4 Intersection Alignments.
- A. The centerlines of intersecting streets will have an angle of intersection of ninety (90) degrees or as close to ninety (90) degrees as is practicable. Local streets will intersect at an angle no less than sixty (60) degrees.
- Arterial and collector streets will have an angle of intersection no less than seventy-five (75) degrees. (See **Figure 25.**) Curvilinear streets should radially intersect.
- B. Right-of-way lines at the corners of street intersections will be rounded with a curve radius of twenty-five (25) feet or greater for residential districts and forty (40) feet for commercial or industrial districts.
- 6.5 Private Streets.
- A. Private streets are permitted only where satisfactory means of providing for their control and maintenance is demonstrated.
1. The City of Tucson will not be responsible for maintenance, liability, or enforcement of traffic control on private streets, except where specifically authorized by ordinance.
2. Erection of all traffic control and street name signs is the responsibility of the developer. Maintenance of all traffic control and street name signs is the responsibility of the property owners' association.
- B. Private streets will be named according to current Pima County criteria and will be approved by Pima County Addressing.
- C. An applicant petitioning the City of Tucson to accept the dedication of a private street to the public must satisfy TDOT that the street meets City Standards for public streets, such as structure, right-of-way, and all other public street provisions.
- D. Private streets must meet all the requirements of public streets which carry similar types and volumes of traffic, except where specific exceptions are noted in this Standard.
- E. PAALs are not acceptable for dedication as public rights-of-way.
- 6.6 Alleys. Alleys are to be used for utility placement, provision of sanitary services, and as a secondary point of access to property.

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**3-01.7.0 MODIFICATIONS.**

- A. Where, in the opinion of the CDRC, there exist extraordinary conditions of topography, land ownership, adjacent development, Historic District review, or other circumstances not provided for in this Standard, the CDRC may modify this Standard in such a manner appropriate to the public interest.
- B. In granting a modification of this Standard or requirements of these provisions, the CDRC may make such additional requirements as appear necessary, in its judgment, to secure substantially the objectives of the Standards or requirements so modified.
- C. All items not specifically covered by this Standard will be judged on a case-by-case basis by the CDRC without setting precedent.

**3-01.8.0 APPEALS.** Appeals to decisions made by the CDRC under this Standard are to the Zoning Examiner. The process of appeals will follow the format established in Sec. 5.4.4.1 of the *LUC*.

**3-01.9.0 ENFORCEMENT.** The Department of Transportation is responsible for enforcing the provisions of the Standard.

**3-01.10.0 LIST OF FIGURES.**

- Figure 1 - Typical Cross Section for Interior Roads - No Parking Lanes (ADT 0-1,000)
- Figure 2 - Typical Cross Section - Two Parking Lanes (ADT 0-1,000)
- Figure 3 - Typical Cross Section - Handicapped Accessible Drive
- Figure 4 - Typical Detail - Handicapped Accessible Ramp Detail for Vertical Curb
- Figure 5 - Typical Cross Section - Two Parking Lanes (ADT 1,001-2,500)
- Figure 6 - Curb and Property Radii
- Figure 7 - Alley/Street Intersection
- Figure 8 - Crowned Streets/Inverted Streets
- Figure 9 - 150' Right-of-Way - Utility Location
- Figure 10 - 120' Right-of-Way - Utility Location
- Figure 11 - 100' Right-of-Way - Utility Location
- Figure 12 - 90' Right-of-Way - Utility Location
- Figure 13 - 76' Right-of-Way - Utility Location
- Figure 14 - 64' Right-of-Way - Utility Location
- Figure 15 - Utility Strip Easement
- Figure 16 - Sight Visibility Triangles
- Figure 17 - Sight Visibility Triangles - 4-Way Intersection
- Figure 18 - Sight Visibility Along Curve
- Figure 19 - Partial Local Street
- Figure 20 - Cul-de-Sac
- Figure 21 - Cul-de-Sac
- Figure 22 - Standard Right-of-Way and Curb Knuckle Design for 50' Right-of-Way

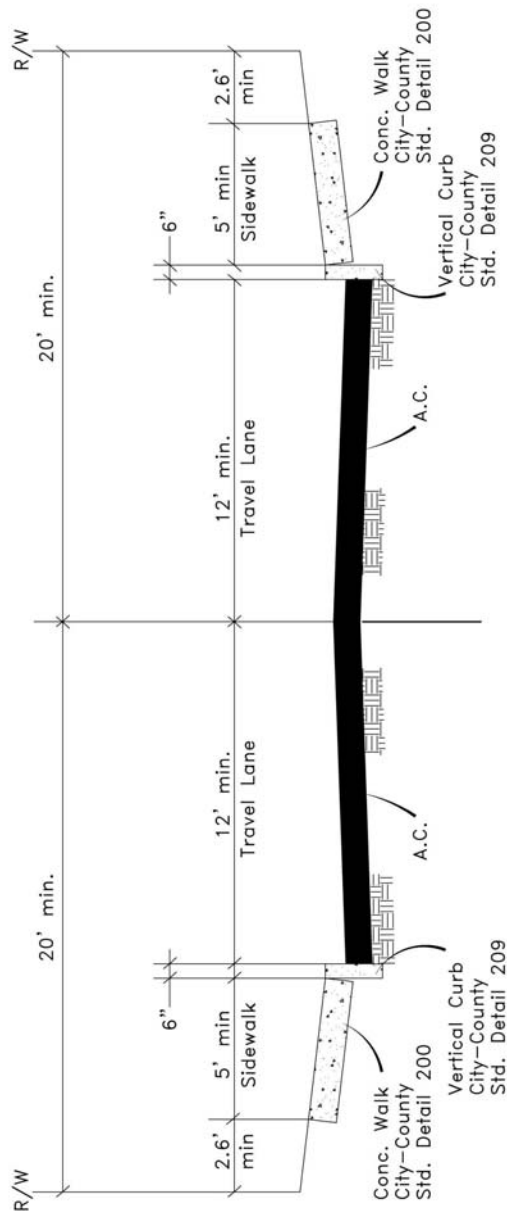
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**3-01.10.0 LIST OF FIGURES. (Cont'd)**

- Figure 23 - Turnarounds
- Figure 24 - Street Jogs
- Figure 25 - Street Intersections

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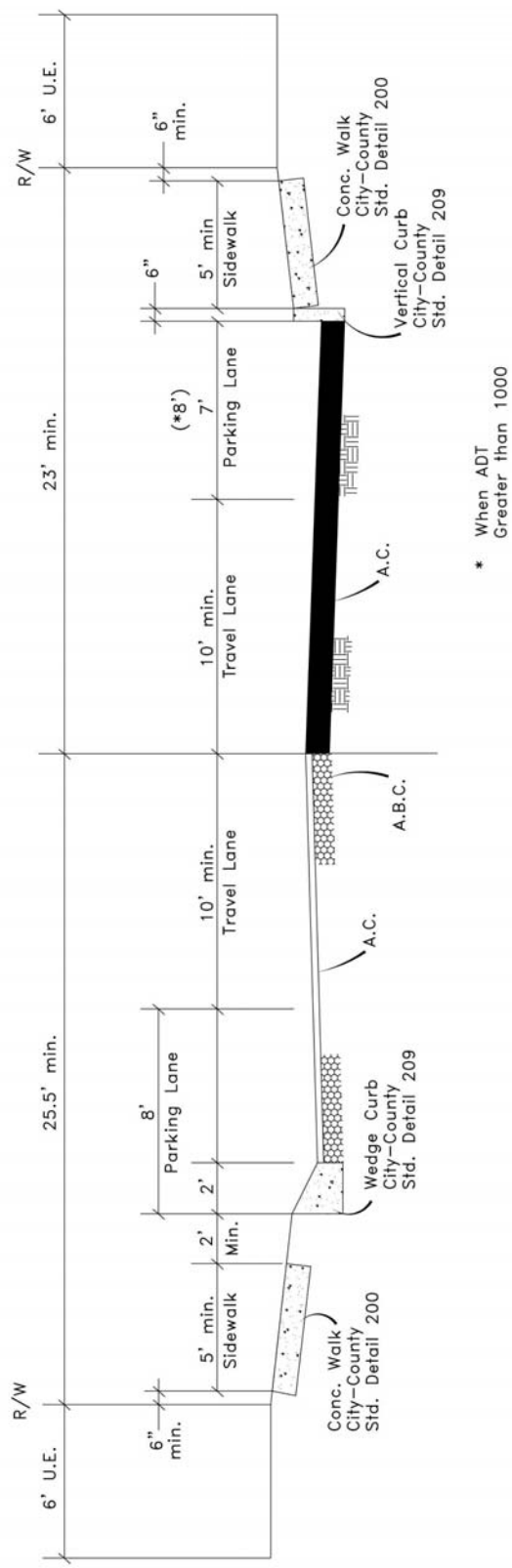
TYPICAL CROSS SECTION FOR INTERIOR ROADS\*

PARKING LANES = 0

\* CAN BE USED WHERE PARKING IS PROVIDED IN COMMON AREAS DISTRIBUTED EVENLY THROUGHOUT THE SUBDIVISION AT A RATIO OF ONE (1) PARKING SPACE PER DWELLING UNIT WITHIN THE SUBDIVISION



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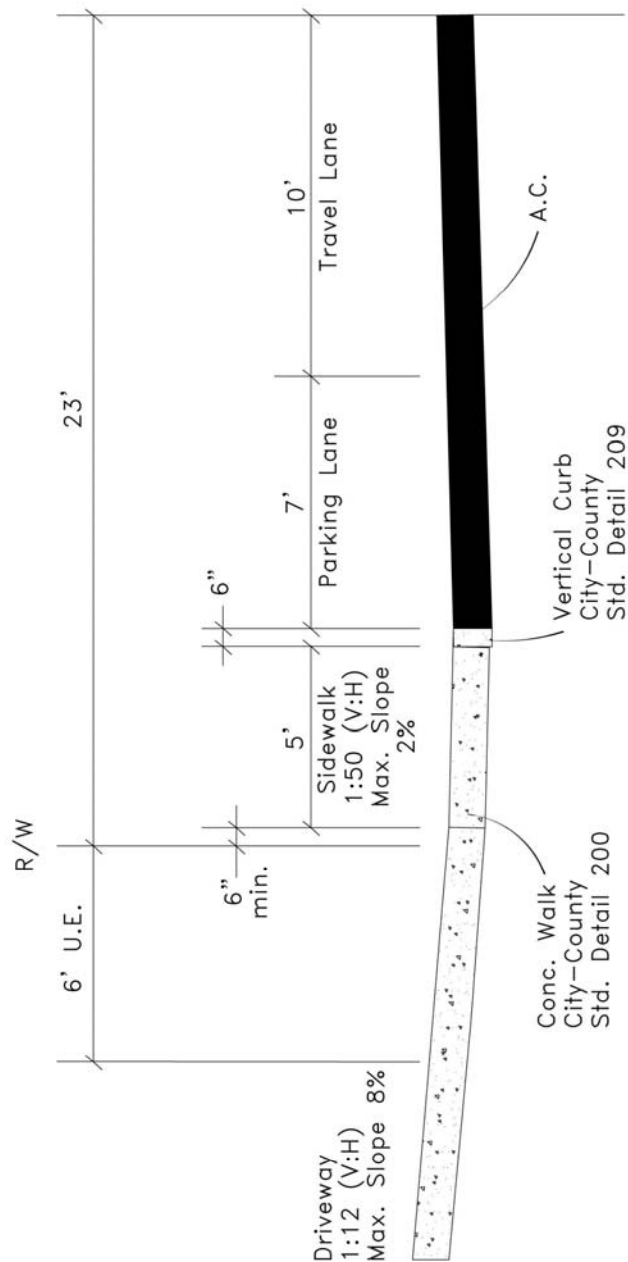


TYPICAL CROSS SECTION

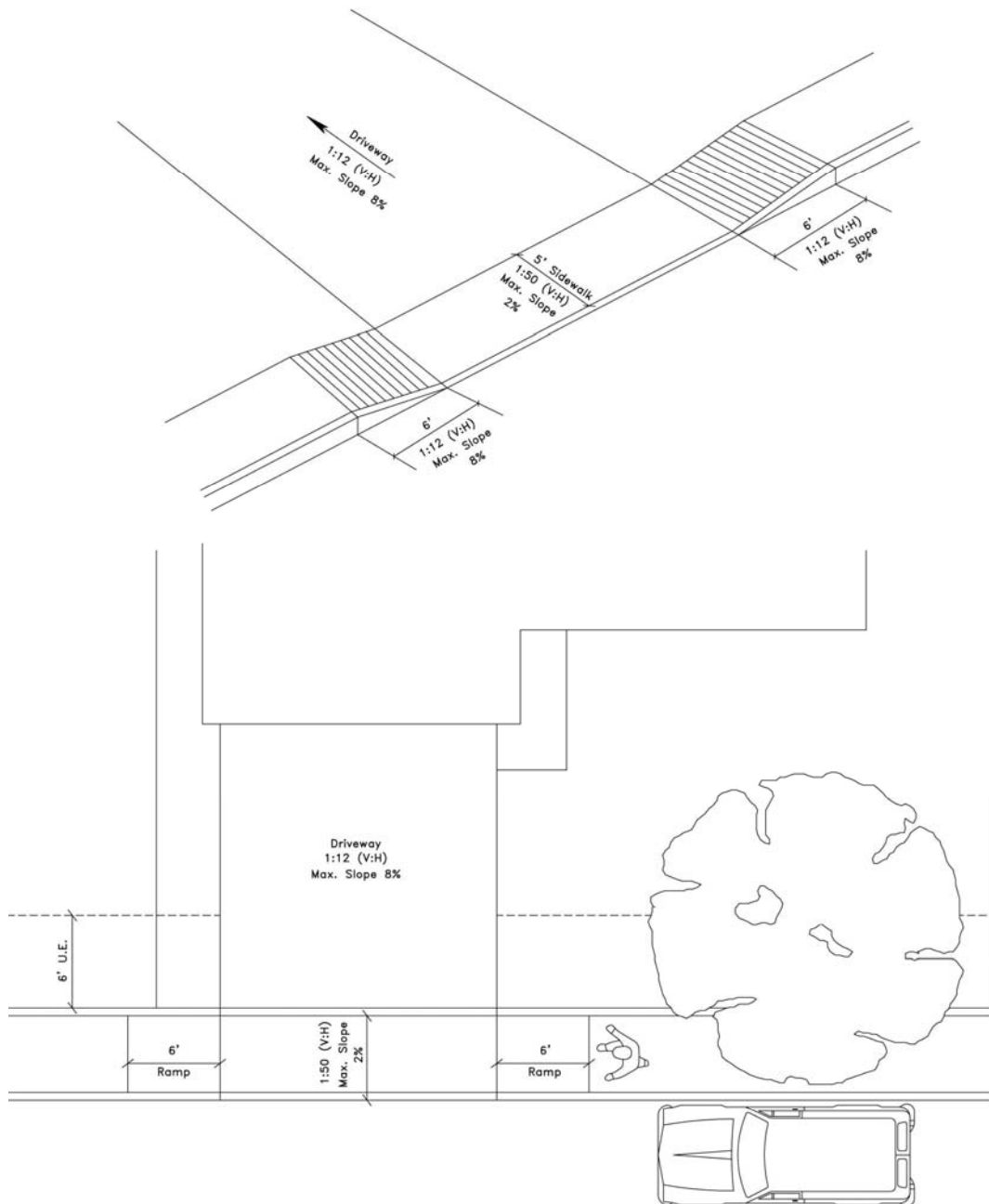
ADT: 0 ~ 1000      PARKING LANES=2

FIGURE 2 - TYPICAL CROSS SECTION -  
TWO PARKING LANES (ADT 0-1,000)

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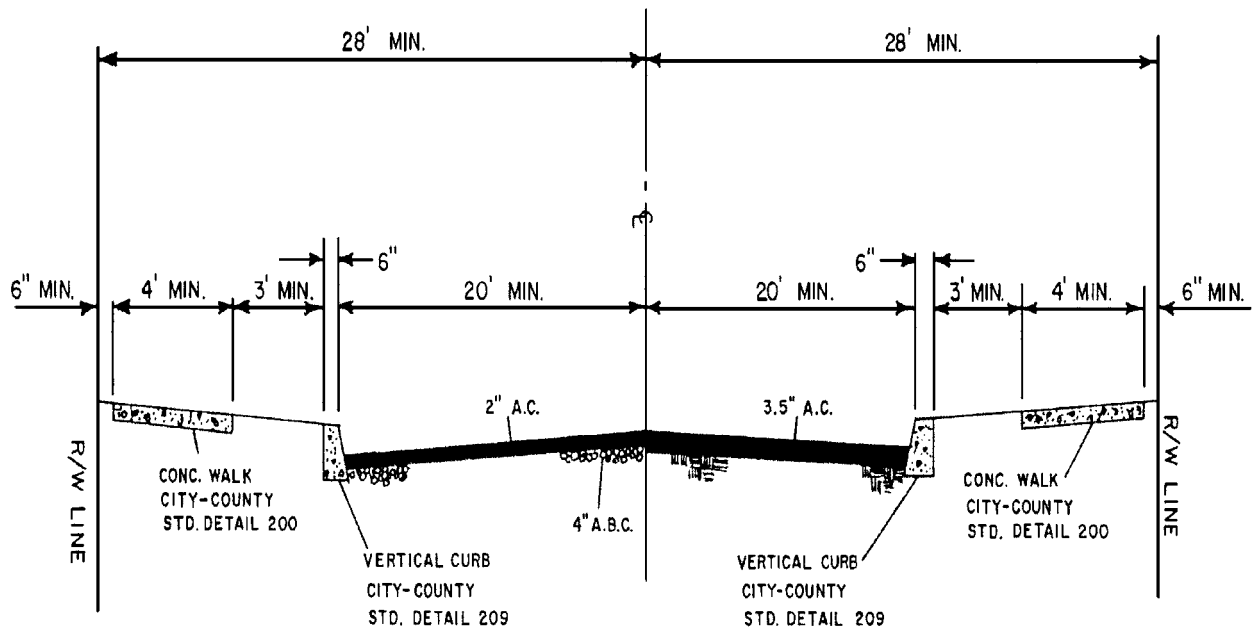


TYPICAL CROSS SECTION  
HANDICAPPED ACCESSIBLE DRIVE



# Handicapped Accessible Ramp Detail For Vertical Curb

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STREET DEVELOPMENT STANDARD**



TYPICAL CROSS SECTION

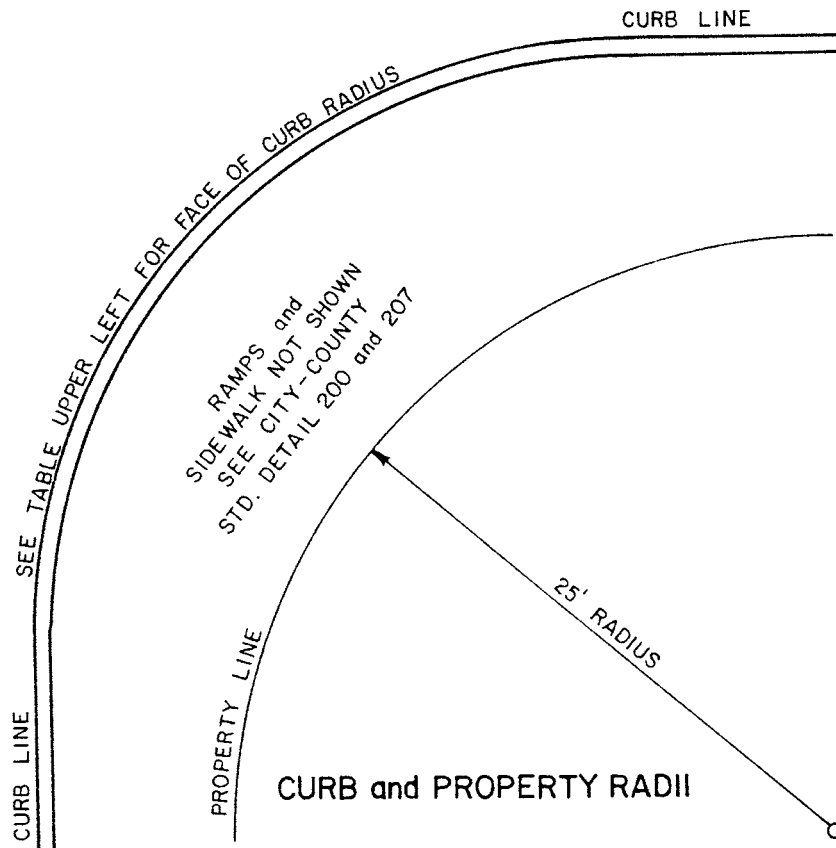
ADT = 1,000

PARKING LANES=2

**CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD**

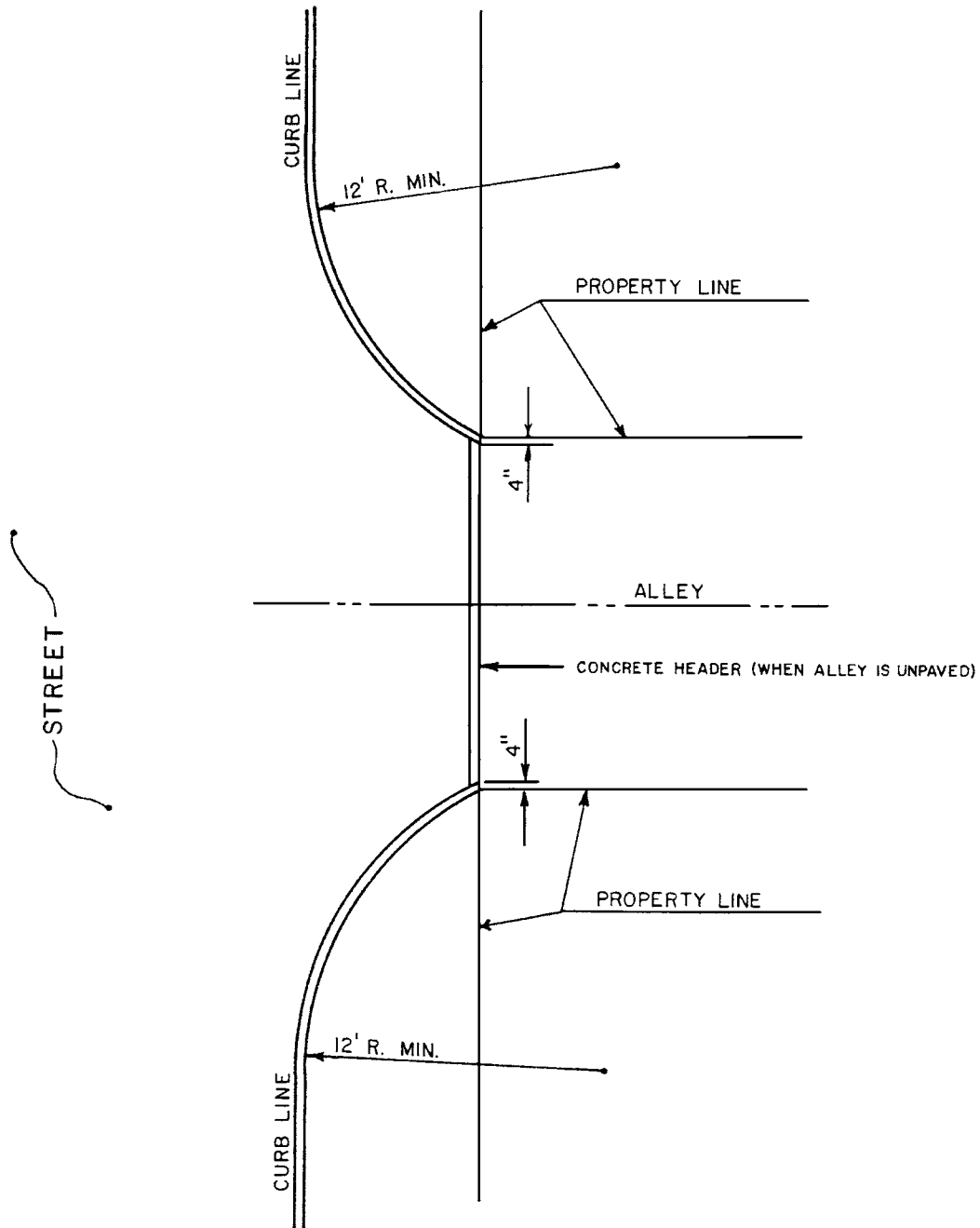
**MINIMUM CURB RETURN RADIUS**

|                    | ARTERIAL STREET | COLLECTOR STREET | LOCAL STREET | P.A.A.L./ DRIVEWAY |
|--------------------|-----------------|------------------|--------------|--------------------|
| ARTERIAL STREET    | 30'             | 25'              | 25'          | 25'                |
| COLLECTOR STREET   | 25'             | 25'              | 25'          | 25'                |
| LOCAL STREET       | 25'             | 25'              | 18'          | 18'                |
| P.A.A.L./ DRIVEWAY | 25'             | 25'              | 18'          | 18'                |



**FIGURE 6 - CURB AND PROPERTY RADII**

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STREET DEVELOPMENT STANDARD



SIDEWALK AND RAMPS NOT SHOWN

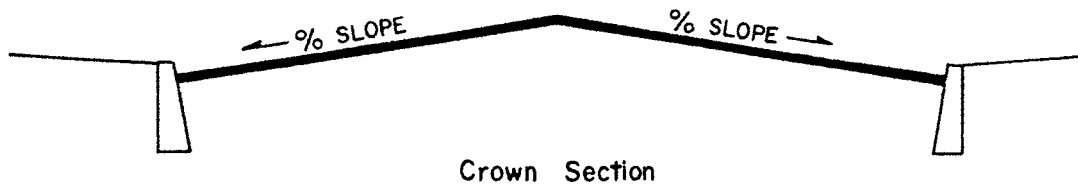
ALLEY/STREET INTERSECTION

FIGURE 7 - ALLEY/STREET INTERSECTION

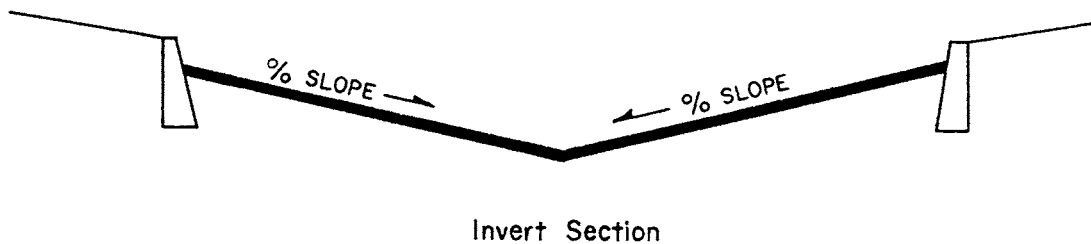
**CITY OF TUCSON  
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STREET DEVELOPMENT STANDARD**

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| LONGITUDINAL GRADE | CROWN   |
|--------------------|---------|
| $\geq 0.50\%$      | 2% MIN. |
| $< 0.50\%$         | 3% MIN. |
| ANY                | 4% MAX. |



| LONGITUDINAL GRADE | INVERT   |
|--------------------|----------|
| $\geq 0.50\%$      | 2% MIN.  |
| $< 0.50\%$         | 3% MIN.* |
| ANY                | 5% MAX.* |



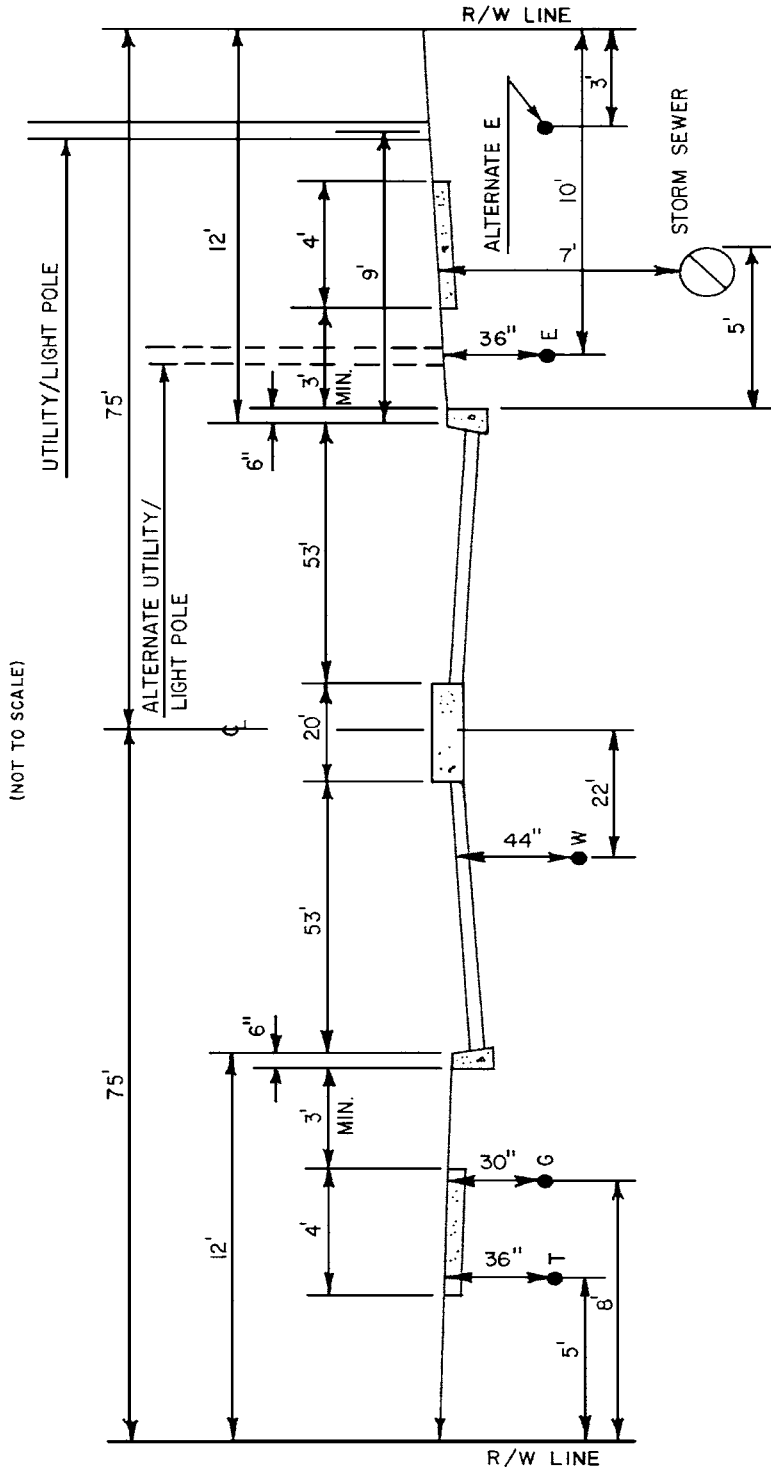
\*INVERTED CROWN SLOPES IN EXCESS OF 3% REQUIRE CITY ENGINEER APPROVAL

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**FIGURE 8 - CROWNED STREETS/INVERTED STREETS**

**CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD**

**150' RIGHT OF WAY- UTILITY LOCATION**



**NOTES:**

- (1) WATER TO LOCATE ON DOWNSTREAM SIDE OF CROSS-DRAINAGE.
- (2) DEPTHS NOTED ARE TYPICAL ONLY.
- (3) ADDITIONAL UTILITIES TO LOCATE A MINIMUM OF 3' FROM EXISTING UTILITIES WITHIN R/W.
- (4) JOINT TRENCH ARRANGEMENT IS AN OPTION FOR TELEPHONE, GAS, AND ELECTRIC AT 10' OFF R/W.  
TYPICAL DEPTH IS 46"
- (5) STORM DRAIN TYPICALLY LOCATED WITHIN 5' FROM BACK OF CURB AND 7' DEEP FROM FINISHED GRADE OF SHOULDER.
- (6) THE STANDARD LOCATION FOR 138 KV OVERHEAD ELECTRIC TRANSMISSION FACILITIES WITHIN 150 FOOT WIDE  
MAJOR STREET RIGHTS-OF-WAY WILL BE 64' FROM STREET CENTERLINE.

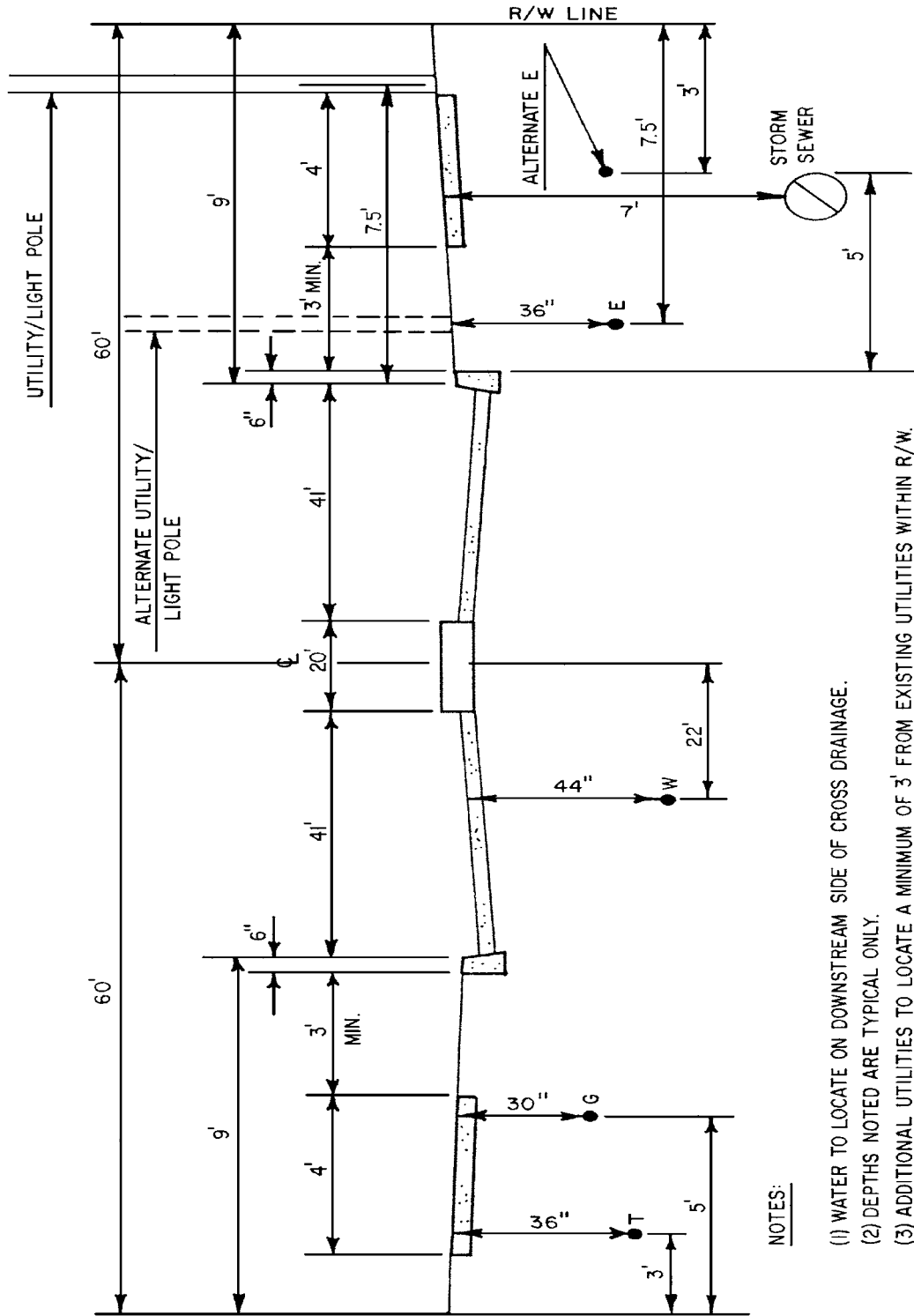
**FIGURE 9 - 150' RIGHT-OF-WAY - UTILITY LOCATION**



**CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD**

**120' RIGHT OF WAY - UTILITY LOCATION**

(NOT TO SCALE)



**NOTES:**

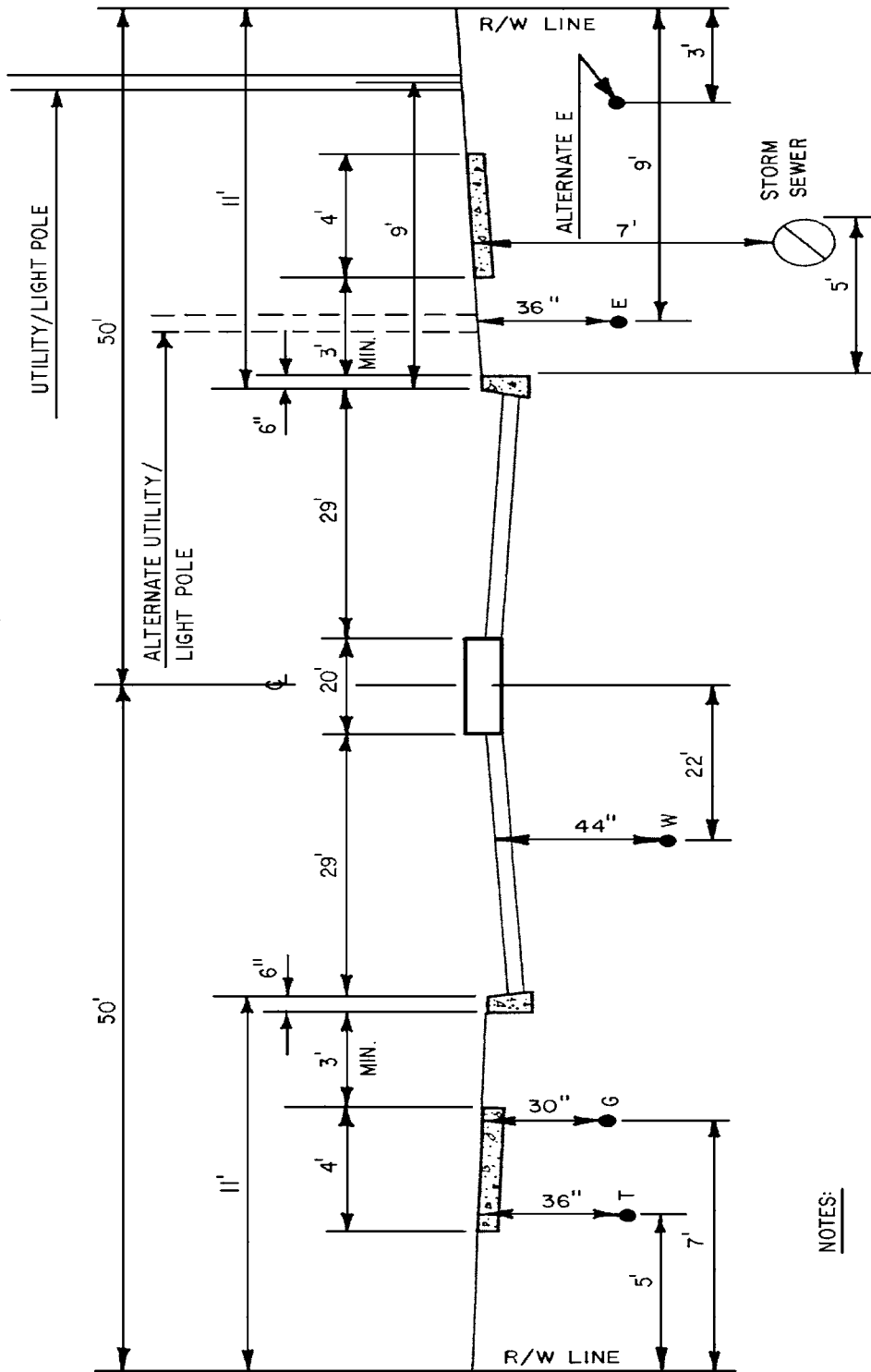
- (1) WATER TO LOCATE ON DOWNSTREAM SIDE OF CROSS DRAINAGE.
- (2) DEPTHS NOTED ARE TYPICAL ONLY.
- (3) ADDITIONAL UTILITIES TO LOCATE A MINIMUM OF 3' FROM EXISTING UTILITIES WITHIN R/W.
- (4) JOINT TRENCH ARRANGEMENT IS OPTION FOR TELEPHONE, GAS, AND ELECTRIC AT 10' OFF R/W. TYPICAL DEPTH IS 46".
- (5) STORM DRAIN TYPICALLY LOCATED WITHIN 5' FROM BACK OF CURB AND 7' DEEP FROM FINISHED GRADE OF SHOULDER.
- (6) THE STANDARD LOCATION FOR 138 KV OVERHEAD ELECTRIC TRANSMISSION FACILITIES WITHIN 120 FOOT WIDE MAJOR STREET RIGHTS-OF-WAY WILL BE 58.5' FROM STREET CENTERLINE.

**FIGURE 10 - 120' RIGHT-OF-WAY - UTILITY LOCATION**

**CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD**

**100' RIGHT OF WAY – UTILITY LOCATION**

(NOT TO SCALE)



**NOTES:**

- (1) WATER TO LOCATE ON DOWNSTREAM SIDE OF CROSS-DRAINAGE.
- (2) DEPTHS NOTED ARE TYPICAL ONLY.
- (3) ADDITIONAL UTILITIES TO LOCATE A MINIMUM OF 3' FROM EXISTING UTILITIES WITHIN R/W.
- (4) JOINT TRENCH ARRANGEMENT IS AN OPTION FOR TELEPHONE, GAS, AND ELECTRIC AT 10' OFF R/W. TYPICAL DEPTH IS 46".
- (5) THE STANDARD LOCATION FOR 138 KV OVERHEAD ELECTRIC TRANSMISSION FACILITIES WITHIN 100 FOOT WIDE MAJOR STREET RIGHTS-OF-WAY WILL BE 46' FROM THE STREET CENTERLINE.

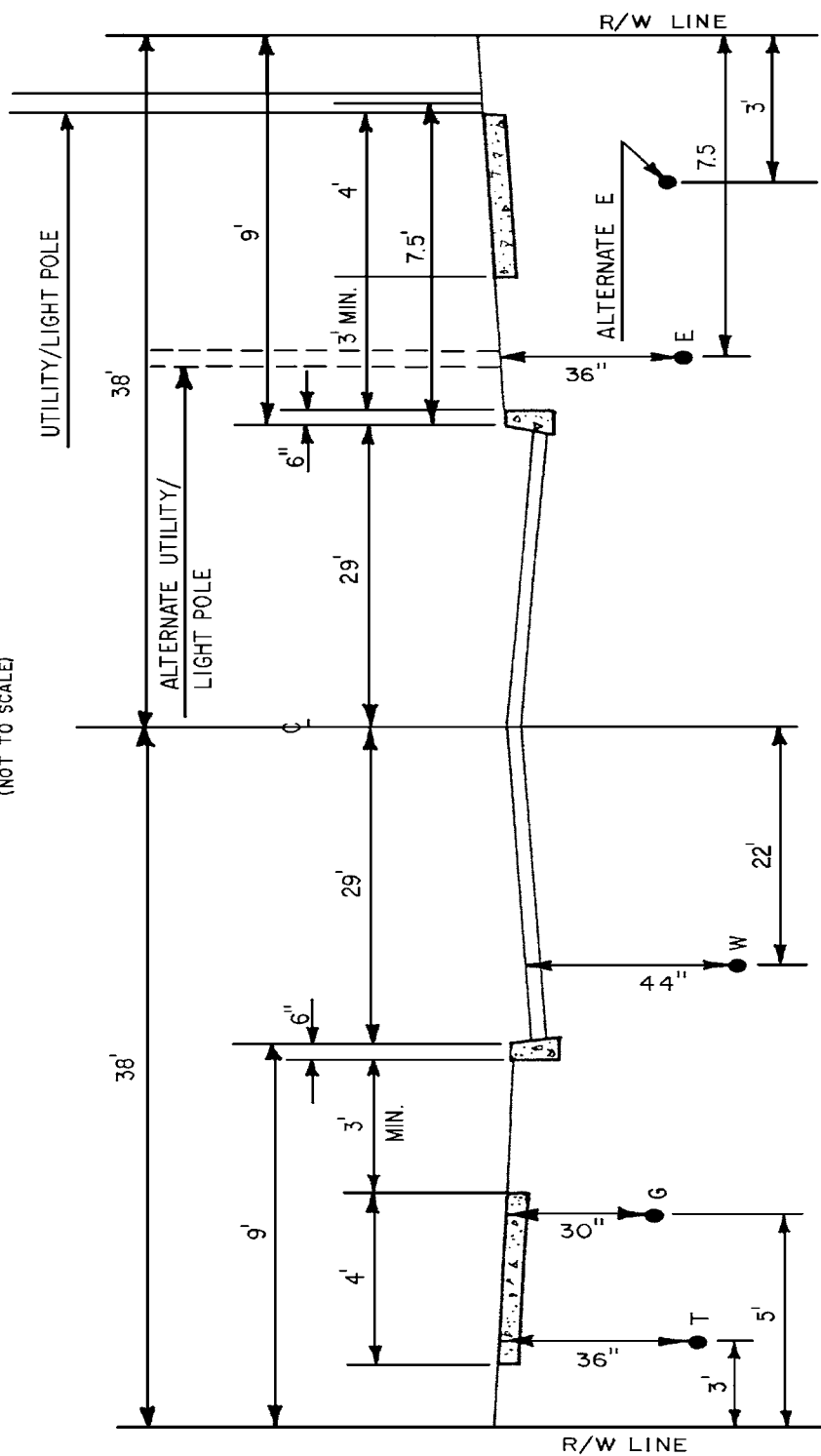
**FIGURE 11 - 100' RIGHT-OF-WAY - UTILITY LOCATION**

(NOT TO SCALE)



- FIGURE 12 - 90' RIGHT-OF-WAY - UTILITY LOCATION**

(NOT TO SCALE)



STREET RIGHTS-OF-WAY WILL BE 36.5' FROM STREET CENTERLINE.

**FIGURE 13 - 76' RIGHT-OF-WAY - UTILITY LOCATION**

(NOT TO SCALE)



- (1) WATER TO LOCATE ON DOWNSTREAM SIDE OF CROSS-DRAINAGE.
- (2) DEPTHS NOTED ARE TYPICAL ONLY.
- (3) ADDITIONAL UTILITIES TO LOCATE A MINIMUM OF 3' FROM EXISTING UTILITIES WITHIN R/W.
- (4) JOINT TRENCH ARRANGEMENT IS AN OPTION FOR TELEPHONE, GAS AND ELECTRIC AT 10' OFF R/W.  
TYPICAL DEPTH IS 46".
- (5) THE STANDARD LOCATION FOR 138 KV OVERHEAD ELECTRIC TRANSMISSION FACILITIES WITHIN 64 FOOT WIDE MAJOR STREET RIGHTS-OF-WAY WILL BE 30.5' FROM STREET CENTERLINE.

**FIGURE 14 - 64' RIGHT-OF-WAY - UTILITY LOCATION**

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STREET DEVELOPMENT STANDARD

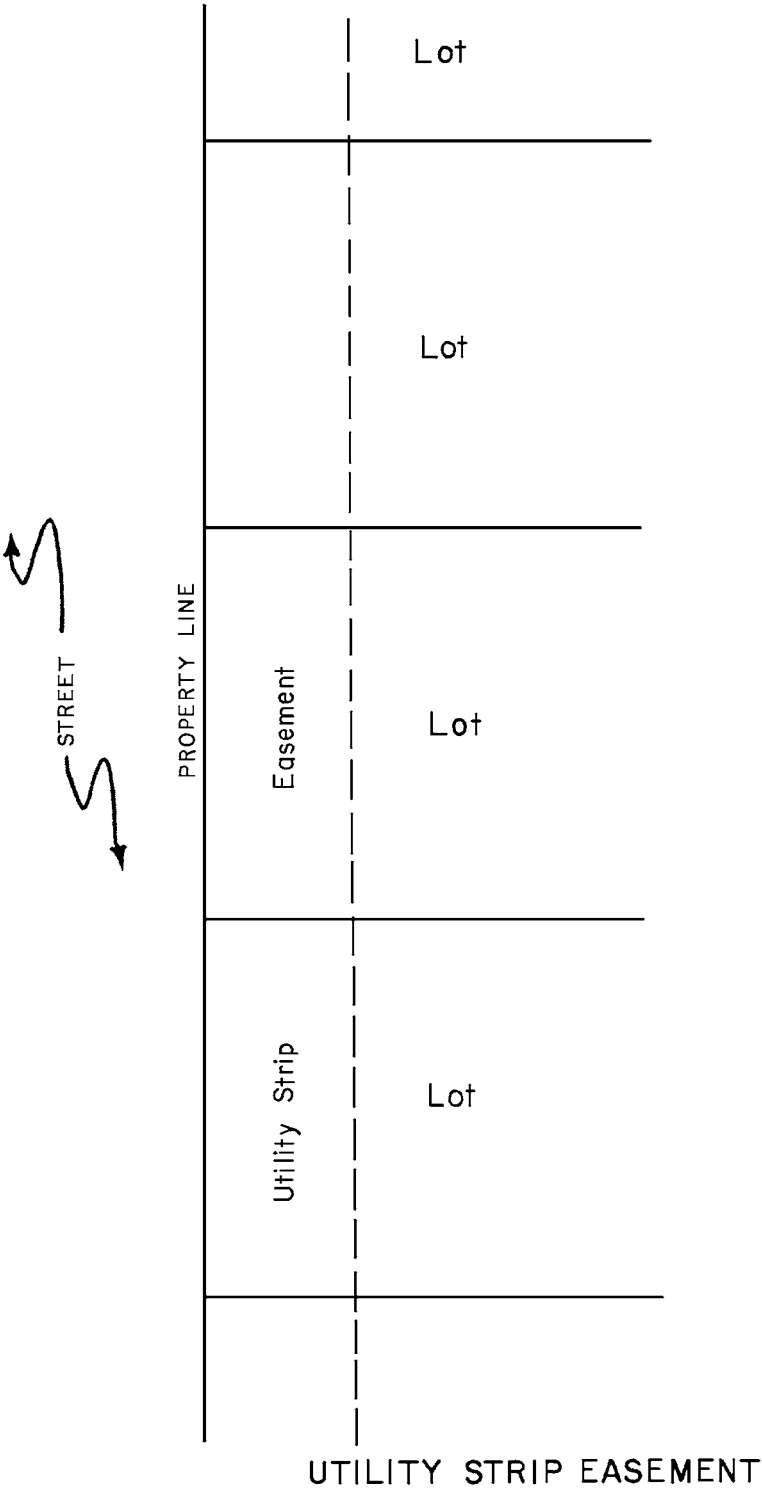
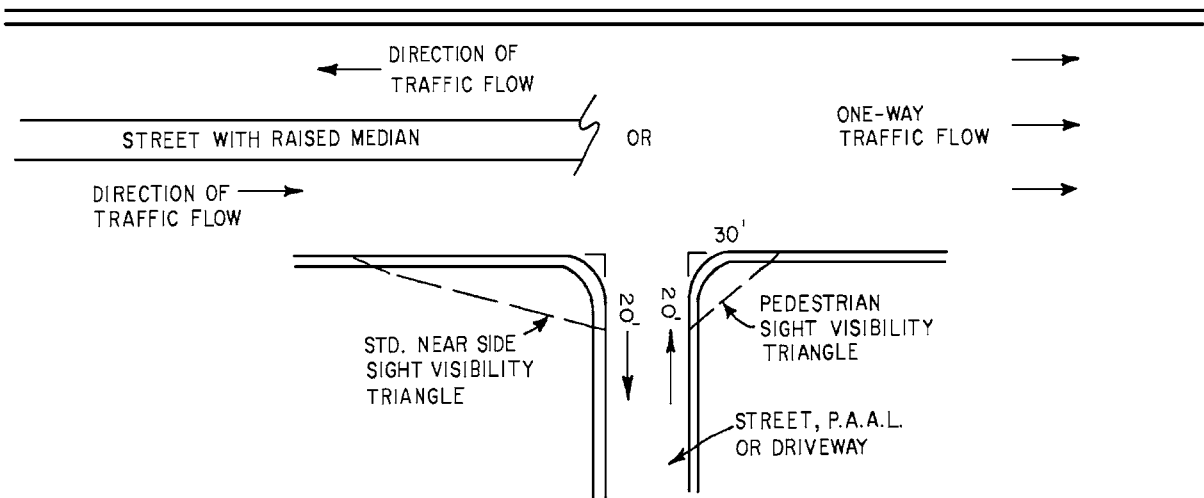
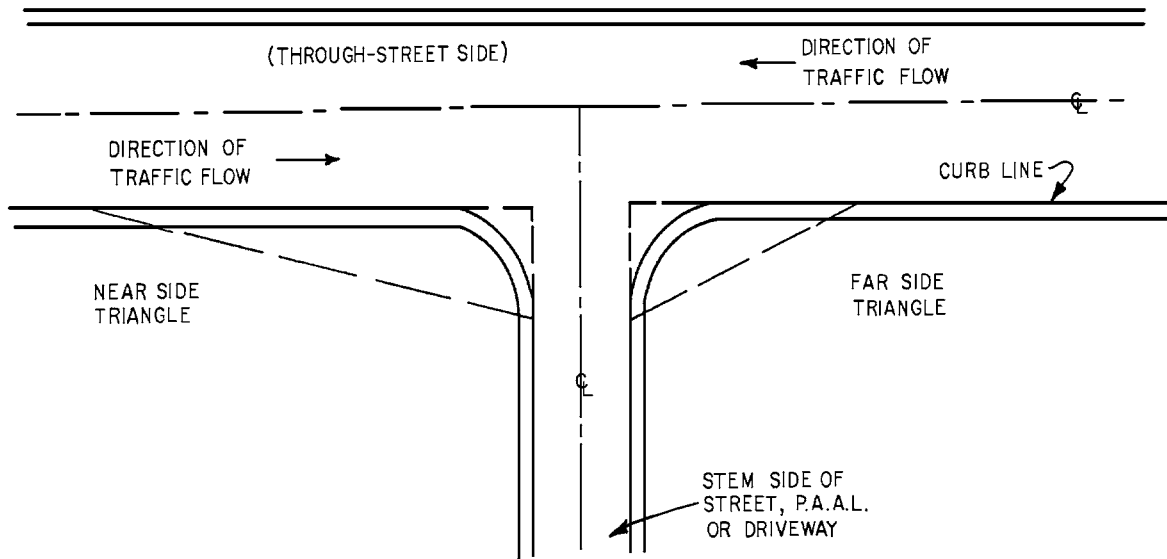


FIGURE 15 - UTILITY STRIP EASEMENT

**CITY OF TUCSON  
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STREET DEVELOPMENT STANDARD**

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FOR THROUGH-STREET LENGTH OF TRIANGLE SEE DEV. STD. 3-01.5.3

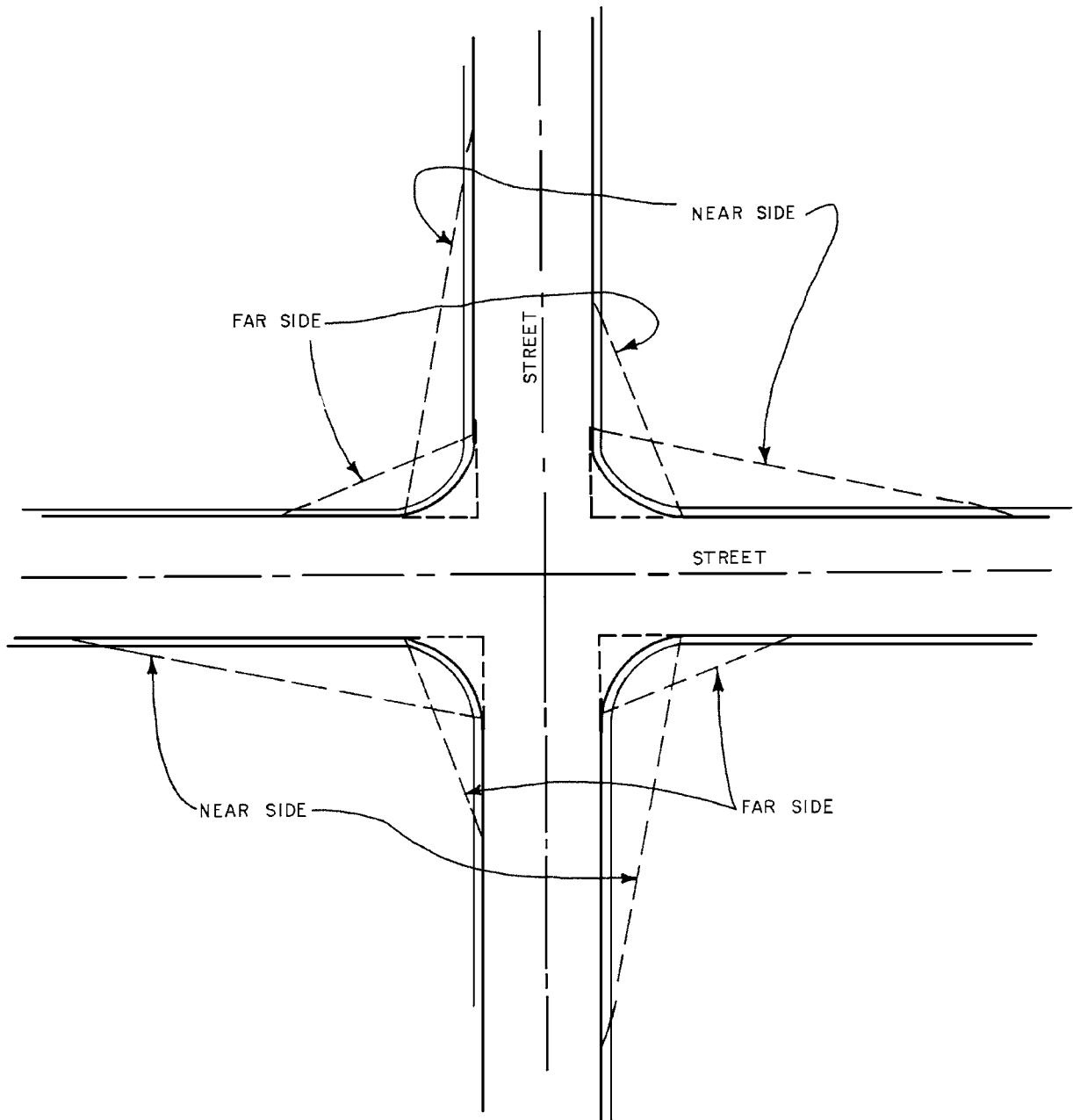
**FIGURE 16 - SIGHT VISIBILITY TRIANGLES**

CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD

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4-WAY INTERSECTION

(NOT TO SCALE)



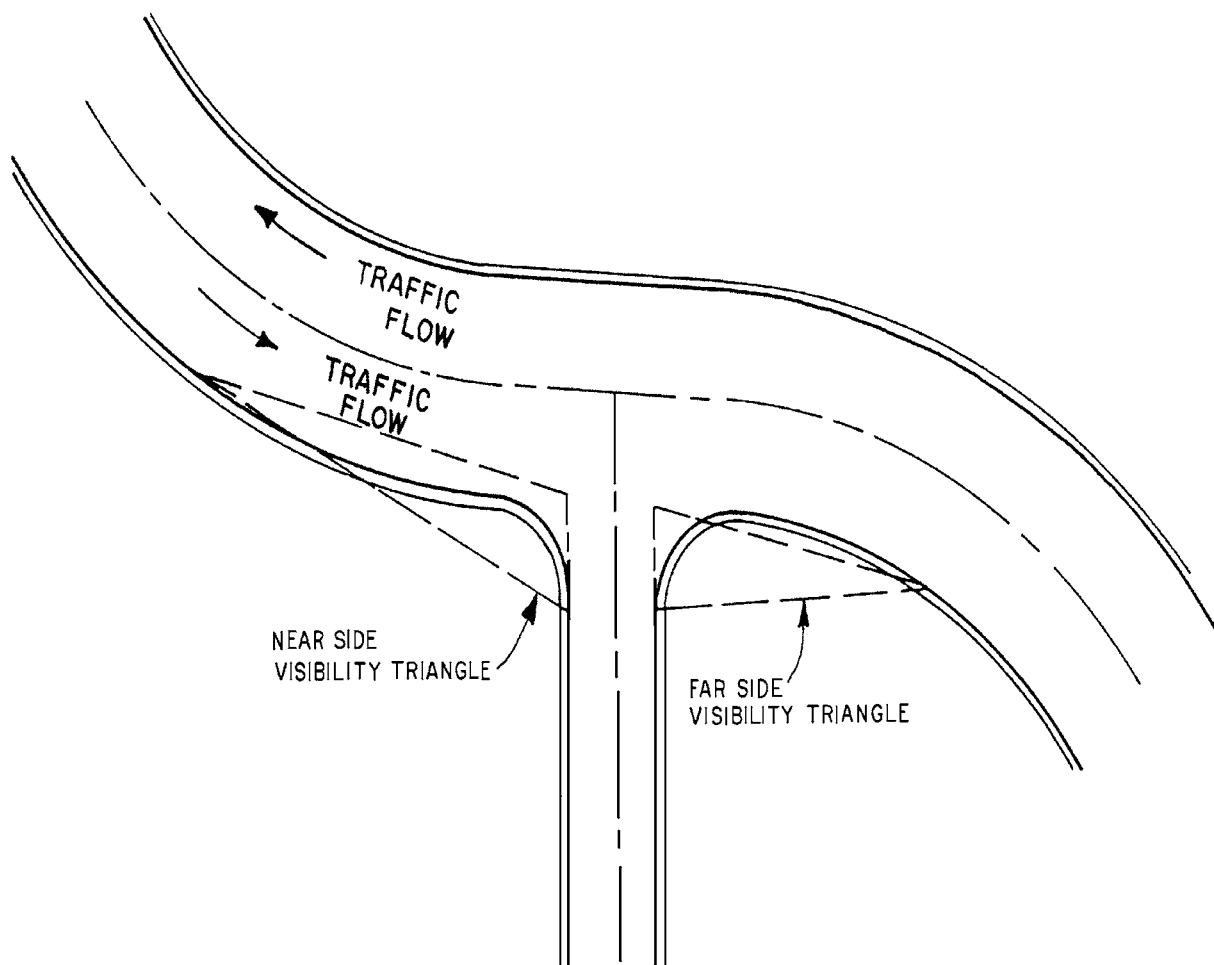
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FIGURE 17 - SIGHT VISIBILITY TRIANGLES - 4-WAY INTERSECTION



## SIGHT VISIBILITY ALONG CURVE

(NOT TO SCALE)

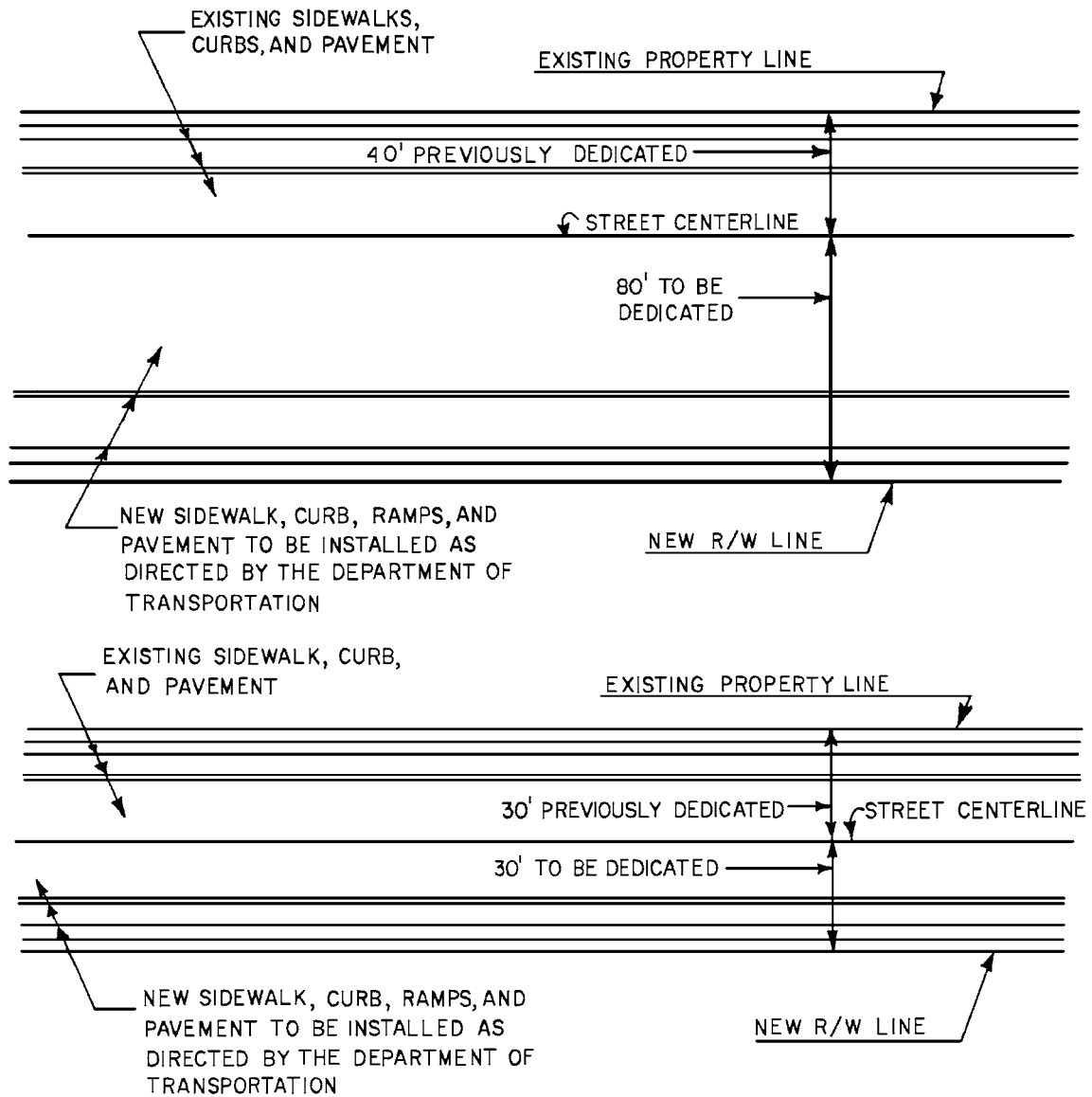


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FIGURE 18 - SIGHT VISIBILITY ALONG CURVE

**CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD**

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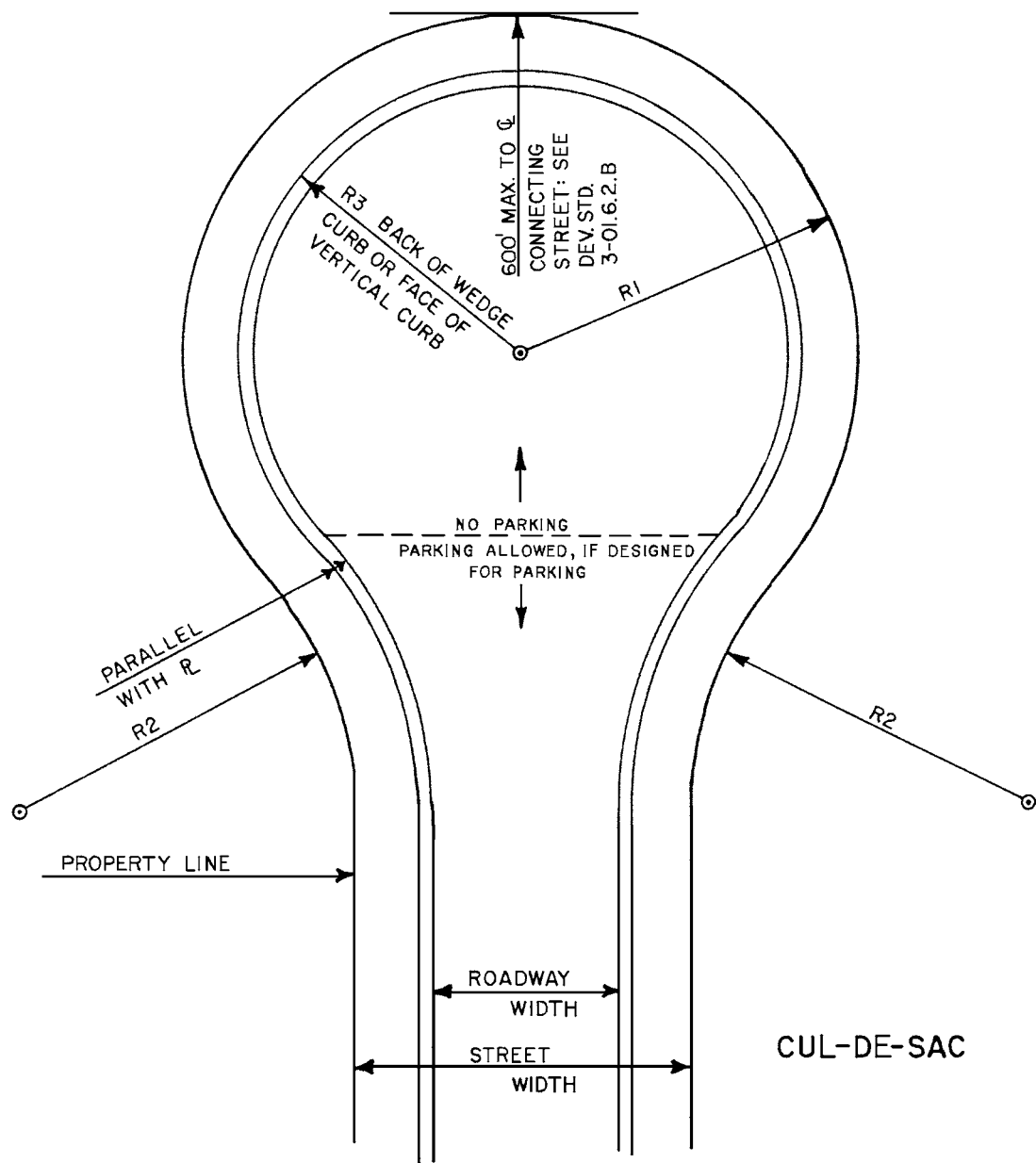


**PARTIAL LOCAL STREET**

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**FIGURE 19 - PARTIAL LOCAL STREET**

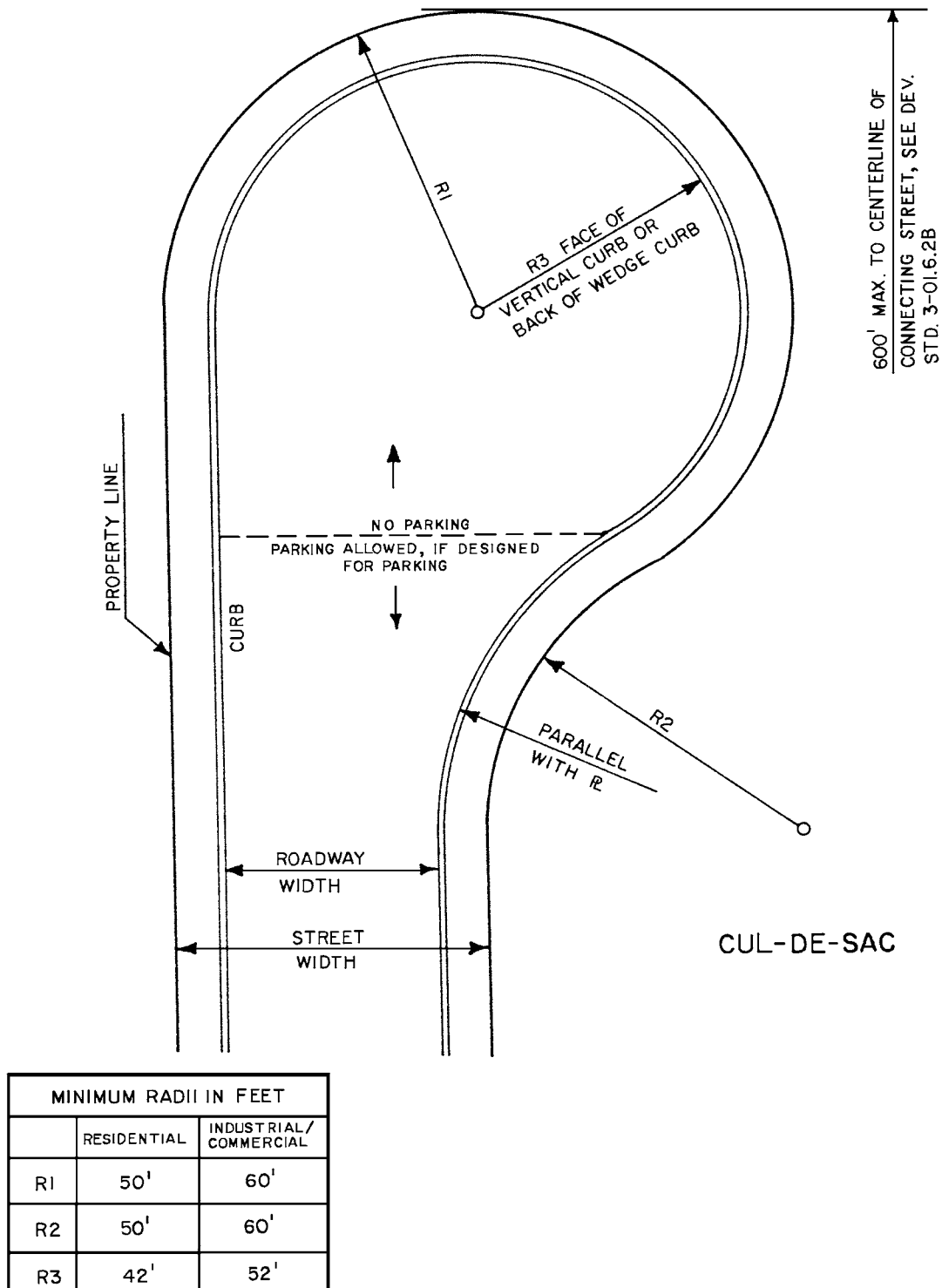
CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD



| MINIMUM RADII IN FEET |             |                           |
|-----------------------|-------------|---------------------------|
|                       | RESIDENTIAL | INDUSTRIAL/<br>COMMERCIAL |
| R1                    | 50'         | 60'                       |
| R2                    | 50'         | 60'                       |
| R3                    | 42'         | 52'                       |

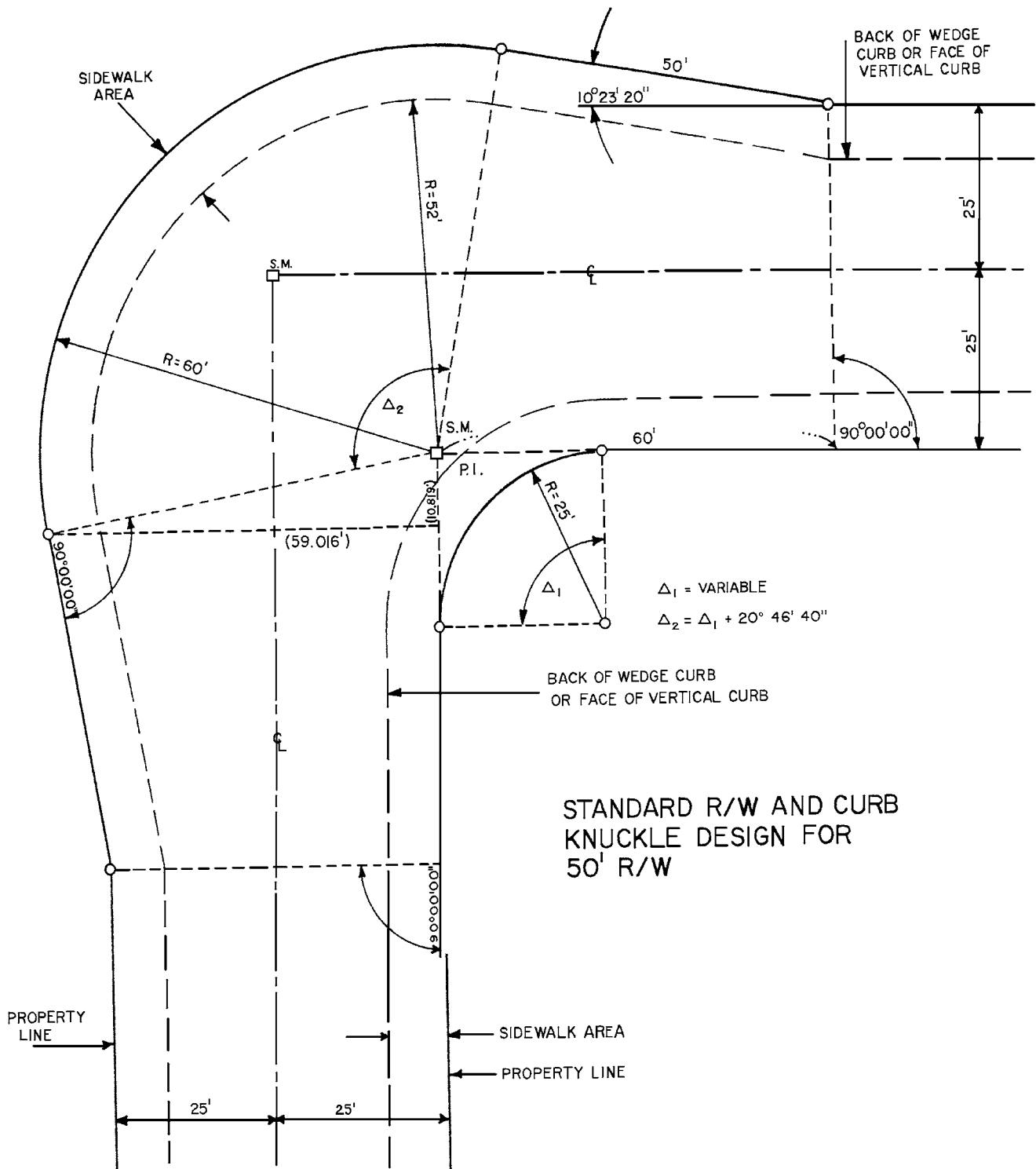
FIGURE 20 - CUL-DE-SAC

**CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD**



**FIGURE 21 - CUL-DE-SAC**

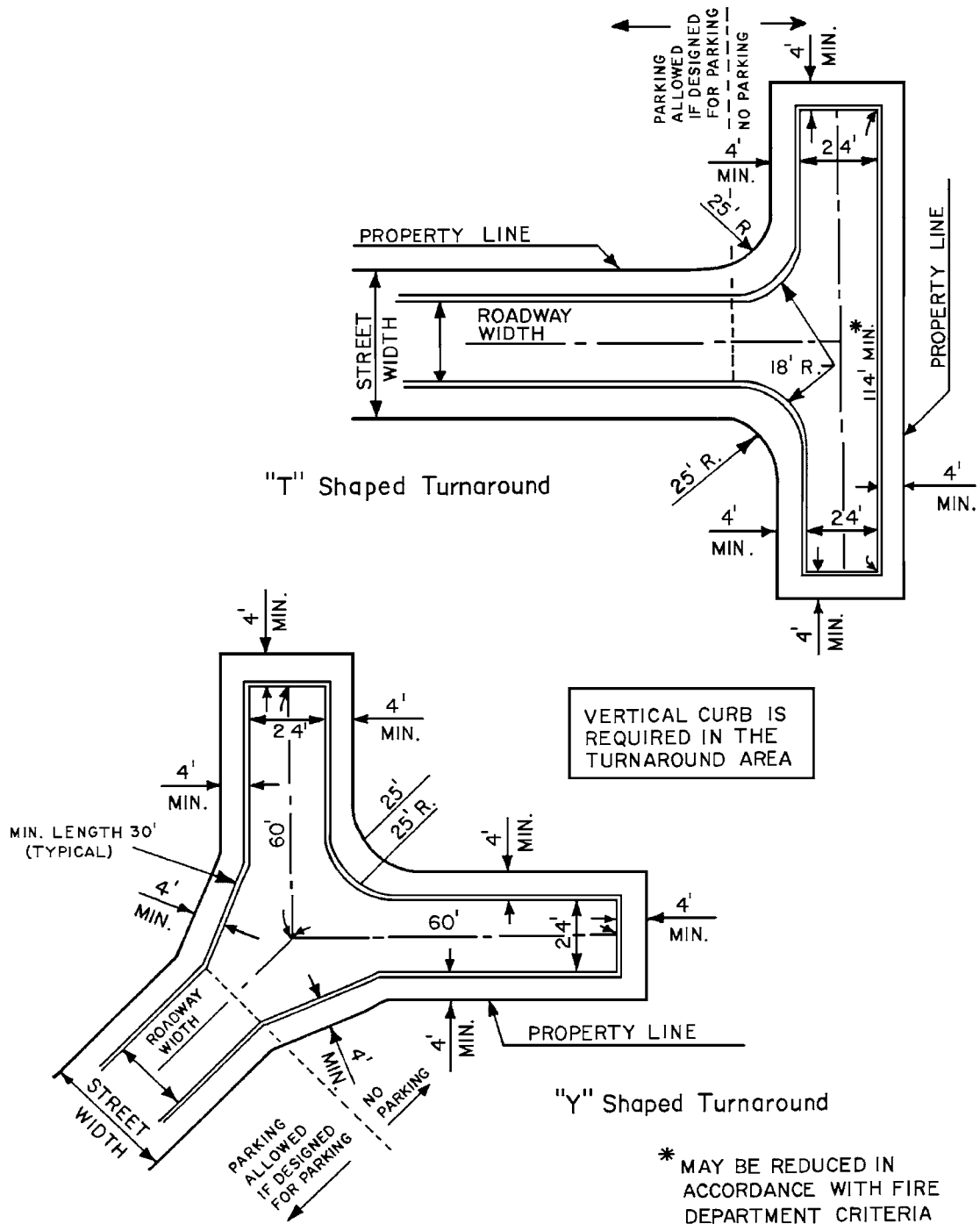
**CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD**



**FIGURE 22 - STANDARD RIGHT-OF-WAY AND CURB KNUCKLE DESIGN  
FOR 50' RIGHT-OF-WAY**

**CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD**

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**TURNAROUNDS**

**FIGURE 23 – TURNAROUNDS**

CITY OF TUCSON  
DEVELOPMENT STANDARD NO. 3-01.0  
STREET DEVELOPMENT STANDARD

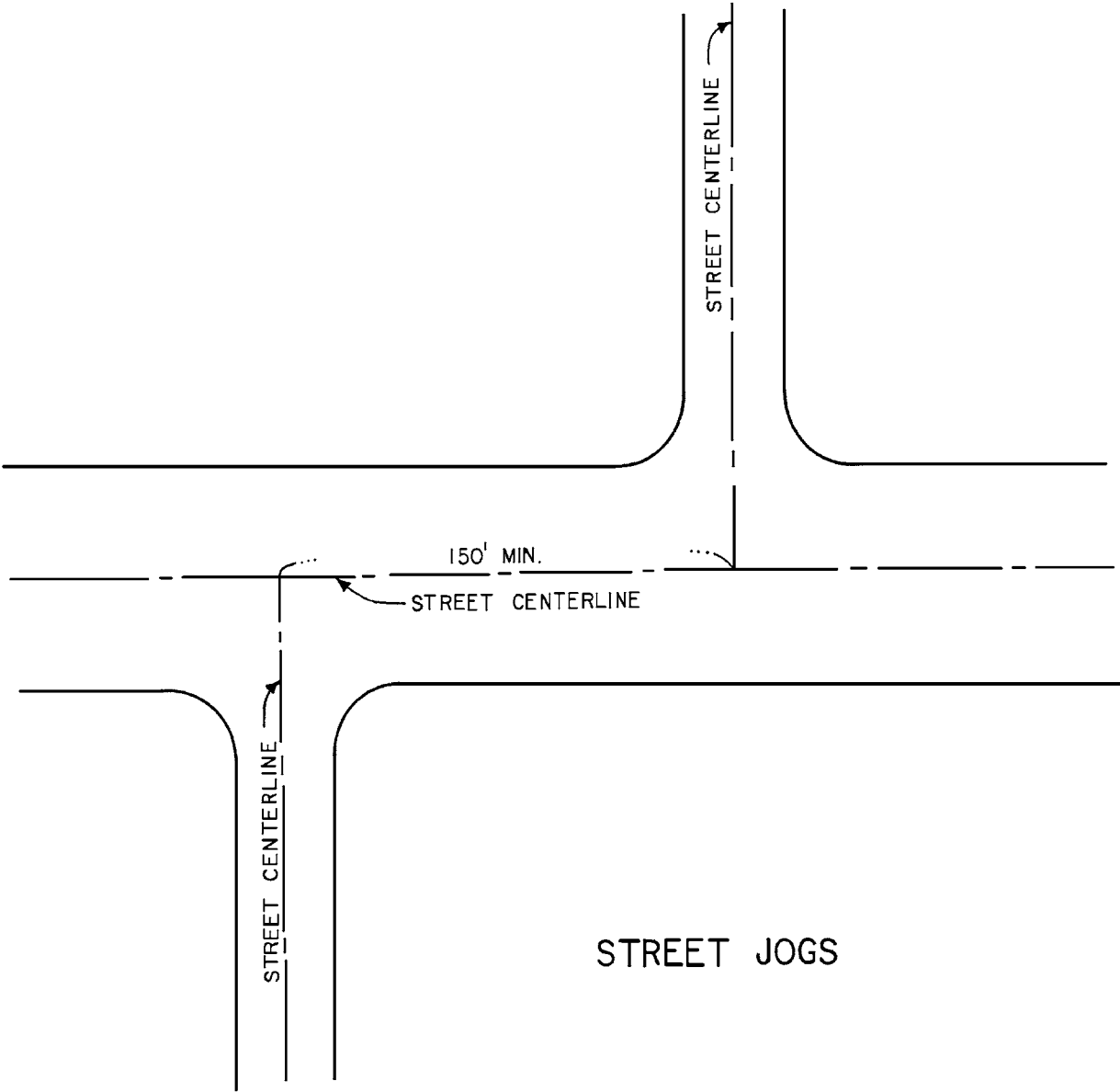
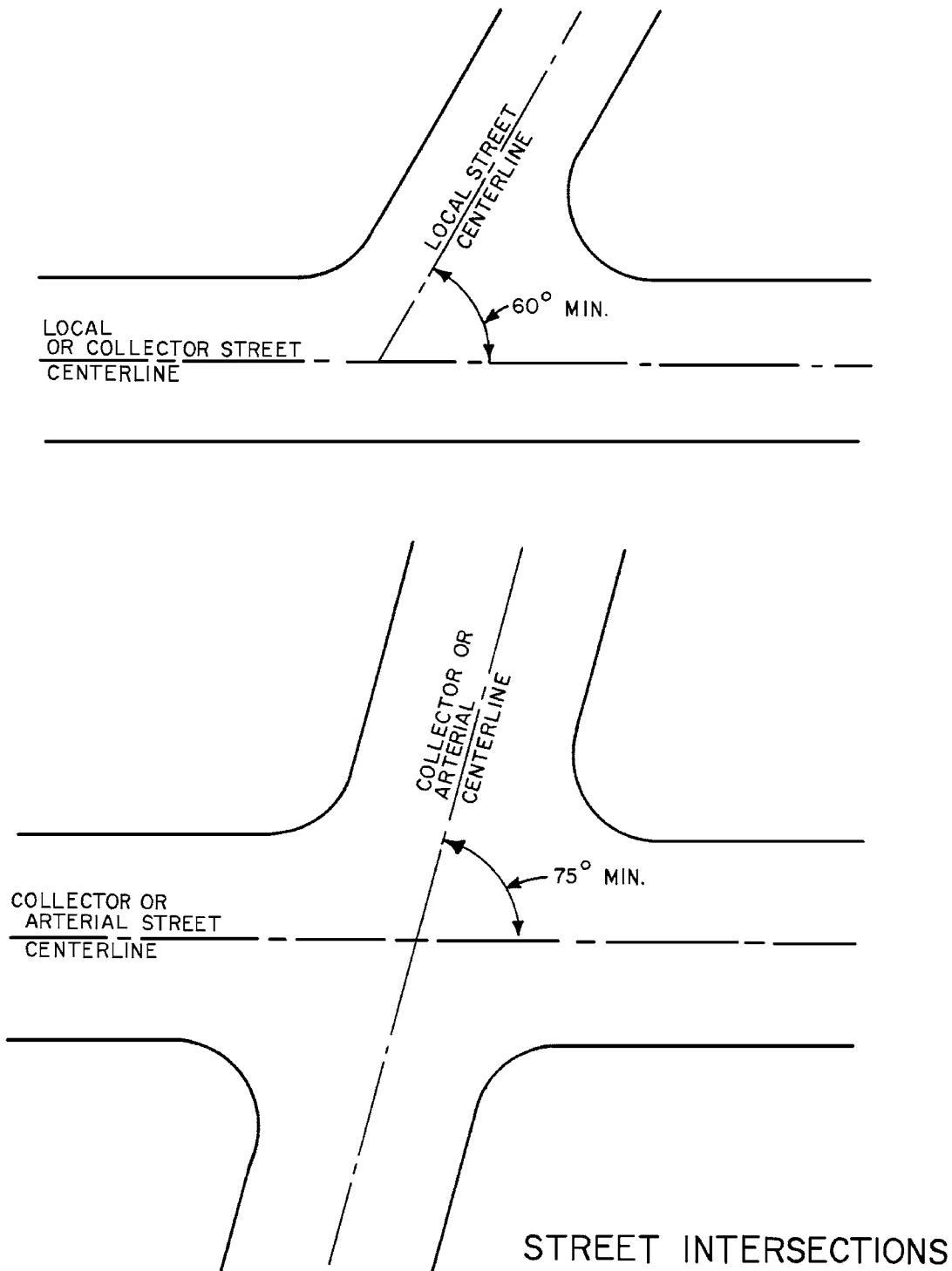


FIGURE 24 - STREET JOGS



**FIGURE 24 - STREET JOGS**